



science for humanity

science for society

science in thinking

Breakthrough Science Society

(A Voluntary Organisation Committed to the Cause of Science, Culture and Scientific Outlook)

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NEWSLETTER



All India Science Conference

8-10 February, 2025

Tagore Theatre, Thiruvananthapuram, Kerala

Day 1: Feb 8, 2025

Inaugural session:

The All India Science Conference organized by Breakthrough Science Society was held at the Tagore Theatre in Thiruvananthapuram on 8 - 10th February, 2025. Prof Dhruba Jyoti Mukhopadhyay, All India President of Breakthrough Science Society presided. Dr Kurien Isaac, former professor, IIT Mumbai and chairman of the reception committee of the conference welcomed the delegates.



Seated on the dais are Dr Rajeevan P P, Mr Arul Jerald Prakash, Dr. Vaisakhan Thampi, Dr. Soumitro Banerjee, Dr. Kurian Isaac, Prof. P Balram, Dipankar Banerjee, Prof. Dhruba Jyoti Mukhopadhyay, Prof. C P Aravindakshan and Prof. Achuthshankar S Nair.



Prof Kurien Issac welcoming the delegates.

Prof P Balram, former director of the Indian Institute of Science, Bangalore inaugurated the conference. His inaugural speech provided a thought-provoking exploration of science, its evolution and its profound impact on society. He began by addressing the fundamental question, "What is science?" In his view, science is the systematic study of nature, with an emphasis on facts and evidence rather than individual beliefs. He acknowledges that the scientific method, while grounded in objectivity, is sometimes not strictly followed, leading to challenges in the application of science by scientists.'



Prof. P Balram addressing the inaugural session.

His speech highlighted the contributions of two pivotal figures in science: Dmitri Mendeleev, who developed the periodic table and Charles Darwin, who introduced the Theory of Natural Selection. These breakthroughs exemplify the transformative power of science in reshaping our understanding of biology and chemistry.

He delved into the agricultural revolutions that were fueled by chemistry and biology. The first agricultural revolution, which alleviated famines in the mid-20th century, was made possible through the production of urea, an important chemical

in fertilizers. The second agricultural revolution, known as the Green Revolution, relied on breakthroughs in biology and genetics, dramatically improving food production. While these revolutions have been transformative, he also pointed out that no chemical process is entirely clean and every anthropogenic activity, including these advancements, contributes to carbon dioxide emissions and environmental degradation.



A view of the audience.

A recurring theme in Prof Balram's speech was the ethical responsibility of science. He emphasized that science can both enrich and harm society. For example, while chemistry and biology have contributed to medical advancements, they have also been used for destructive purposes such as chemical and biological warfare. Science, therefore, must be viewed through an ethical lens, considering not just its potential for progress, but its unintended consequences.

He cited a former Indian Prime Minister's call to make science accessible to the public, noting that scientific progress should be in tune with the majority of society. The speech underscored the critical role that education plays in fostering scientific research.

Prof. Balram quoted Mahendralal Sircar, who propagated science in India in the early 20th century and reflected on the challenges that higher education faces today, particularly regarding funding and staffing. He lamented that despite the tremendous potential of science, society as a whole has yet to embrace its philosophical and ethical implications fully.

He touched upon some of the most pressing issues in contemporary science, such as climate change, environmental degradation and artificial intelligence. He drew attention to the challenges of predicting the future, particularly in areas like AI, where it is difficult to foresee the societal impacts 25 to 50 years from now. He also highlighted the early work of Charles Keeling in measuring carbon dioxide levels, which was initially met with skepticism but has since become one of the most important indicators of global climate change. Drawing from Vannevar Bush's 1945 report "Science: The Endless Frontier," Prof Balram noted that science alone does not provide solutions to social and economic problems. Rather, it must be part of a broader team, including politics, economics and ethics, to ensure the well-being of society. However, science's role in national welfare is undeniable - without scientific progress, other achievements are unlikely to secure health, prosperity and security for a nation.

Prof Balram advocated the importance of basic scientific research, which often leads to technological innovations with unforeseen applications. He cited the example of X-rays, which was discovered in physics but found

immediate applications in medicine. Similarly, MRI technology, which emerged from basic science research on magnetic fields, revolutionized medical imaging in the 1970s. He emphasized that while scientific breakthroughs may seem unrelated to practical use at the time, they can eventually lead to life-changing technologies.

He concluded by acknowledging that science faces significant challenges in today's world. These challenges include the short attention span in students, the pressure for quick results from political leaders and the difficulty of bridging the gap between basic science and its practical applications. He stressed the importance of patience in scientific progress, pointing out that many of the world's most groundbreaking discoveries were made through incremental work and often by researchers who did not foresee their discoveries' eventual applications. The final part of Prof. Balram's speech delved into the concept of evolution and the long time scales associated with scientific phenomena. He compared the time scale of geological and biological evolution, which spans millions of years, with the much shorter time scale of human and political life, which often leads to an incomplete understanding of the larger environmental challenges we face. He reflected on humanity's role in the global carbon cycle and the need for sustainable practices, noting that if humans were removed from the equation, the Earth's carbon dioxide levels would have remained stable for millions of years. In his speech, Prof. Balram offered a comprehensive reflection on the relationship between

science, society, and ethics. He acknowledged the tremendous contributions that science has made to human progress while highlighting the complex challenges that arise from technological advancements. He called for a greater appreciation of basic science, an understanding of its long-term implications, and an ethical approach to its use. Finally his speech encouraged scientists to be mindful of the societal impact of their work, to recognize the value of incremental research and to engage with the broader community to address the pressing issues of our time. Prof Dipankar Banerjee, the guest of honour of the function, in his address highlighted the importance of fostering



Prof. Dipankar Banerjee addressing the session.

scientific temper from an early age. Reflecting on his childhood, he shared how his curiosity led him to dismantle toys to understand their workings. He emphasized that scientific temper begins at home and through personal exploration.

He discussed the evolution of educational methods, from traditional to more direct learning styles, stressing the importance of nurturing inquisitiveness in students. He argued that encouraging young minds to question everything is

vital for learning and scientific inquiry and encouraged the conference to explore ways to instill this quality in future generations.

He also spoke about his role at the Indian Institute of Space Science and Technology (IIST), a key institution contributing to India's space missions. IIST was established to address the shortage of skilled engineers for space technology and has since trained thousands of scientists and engineers have supported projects like Chandrayaan.

He acknowledged the efforts of the Breakthrough Science Society (BSS) in promoting rational thinking and science awareness, sharing his personal experiences of demystifying solar eclipses for the public. In conclusion, he stressed that while technologies like AI are advancing, they cannot replace human ingenuity and the need for proper training. He thanked the organizers and wished success to the conference.

Prof Aravindakshan, president, BSS Kerala chapter and a staunch advocate for scientific temper and rational thinking, delivered a warm welcome at the inaugural session of the conference. He expressed pride in Kerala in hosting the event for the first time and encouraged attendees to feel at home, highlighting the importance of collaboration and shared learning.

Acknowledging the young, enthusiastic participants from across India, he commended their dedication to promoting science and debunking myths. Prof Aravindakshan's efforts to advance evidence-based understanding and challenge superstition have inspired many and his leadership continues to



Prof C P Aravindakshan

foster a community of rational thinkers. In closing, he expressed his gratitude to all attendees, wishing them an informative and memorable meeting.

Prof Achuthsankar S Nair, in his address shared a compelling perspective on the transformative power of science and its role in shaping society. He began by congratulating the Breakthrough Science Society for their impactful work in Kerala, praising their well-organized science communication efforts that have played a significant role in promoting scientific knowledge in the region.

He emphasized the role of science and technology in advancing gender equality. He argued that, while social reforms and political movements have been pivotal in improving women's rights, science and technology have also played an equally important role.

He also discussed the evolving landscape of science communication, particularly in relation to younger generations. He noted that traditional methods of science communication, which often focus on abstract philosophies, no longer resonate with today's youth. Instead, he suggested that science should be communicated in a way that aligns with the younger generation's preferences for multimedia,



Dr Achuthsankar S Nair

interactive and concise content. He emphasized that young people should be the ones speaking science to their peers, making it more relatable and engaging.

To conclude, Prof Achuthsankar emphasized that conferences like this should not only focus on discussing science but also explore new methods of communicating it. He expressed his admiration for the Breakthrough Science Society's work and urged them to continue advancing scientific temper and fostering effective science communication.

Mr. Arul Jerald Prakash, in his address expressed his pride and privilege in participating in this important event, reflecting on the growth and challenges of science communication in India.

He said that institutions like observatories, planetariums, innovation hubs and classrooms in Kerala are equipped with state-of-the-art technology and facilities, but these resources remain underutilized due to lack of motivated staff and a narrow understanding of the role of science communication. He stressed that science communication does not end with official working hours, but truly begins when informal educators, passionate volunteers and experts contribute their time after office hours to

engage the public. It is within this space that the Breakthrough Science Society excels, making the most of available resources to promote scientific outreach. He also fondly recalled a memorable event on 31st January, 2020, when BSS collaborated during the solar eclipse. He recalled how over 10,000 people gathered in his campus to witness the event, with BSS members actively participating in science communication and outreach efforts. He reflected on how proud and humbled he felt to see the community come together for a scientific event, which highlighted the power of collaboration and volunteer-driven science dissemination.

Mr. Arul Jerald concluded his address by expressing hope that this conference would pave the way for new methodologies and approaches in science communication, especially with the goal of reaching rural and remote areas. He stressed that it is essential to bring science to every corner of the country, ensuring that even the most distant villages have access to the benefits of scientific knowledge.

In closing, he thanked the Breakthrough Science Society for remembering him even after his retirement and wished the

conference great success. His speech served as an important reminder of the vital role science communication plays in engaging the public and fostering a deeper understanding of science across India.

Dr. Vaisakhan Thampi, in his address shared profound insights on the role of science in our modern world. His speech was a very powerful reminder of both the significance and the challenges of science and scientific outlook, urging a collective effort to continue advancing scientific understanding, especially in the face of pressing global issues.

He touched upon the historical context of the scientific revolution, tracing it back to the 16th century, and remarked that, even in 2025, some fundamental scientific issues like climate change remain unresolved. He expressed concern over how, despite the progress of science, critical issues that require urgent attention are often overlooked, especially when it comes to acknowledging and addressing climate change. This reflection underscored the need for continued dialogue and action within the scientific community.

As a teacher, he shared how he constantly encourages his students to think critically and independently, rather



Mr Arul Jerald Prakash speaking



Dr Vaisakhan Thampi

than passively accepting knowledge. This process of provoking thought and fostering curiosity is essential for the growth of science.

Concluding his address, Dr Vaisakhan emphasized the necessity of constant drive in the advancement of science. He acknowledged that science cannot simply be set into motion and left to progress on its own - it needs continuous inspiration, collaboration and effort. He expressed his happiness at witnessing a gathering of people dedicated to discussing science in the current socio-political context, recognizing how important such events are for the ongoing popularization and understanding of science.

Seminar 1:

The inaugural session was followed by a seminar on "Climate Change and Environmental Degradation: Adaptation and Mitigation". The speakers were Prof C P Rajendran, National Institute of Advanced Studies, Bangalore and Prof. Dhruva Jyoti Mukhopadhyay, President, Breakthrough Science Society.

Prof C P Rajendran highlighted the pressing environmental issues and human-induced ecological degradation, particularly in India. He began his talk with a reference to the book 'Collapse' by Jared Diamond, where the author identifies 12 environmental problems facing humankind today. The first eight have historically contributed to the collapse of past societies: Deforestation and habitat destruction, soil problems (erosion, salinization and soil fertility losses), water management problems, overhunting overfishing, effects of introduced species on native species,



Prof C P Rajendran

overpopulation, increased per-capita impact of people. Further, he said that four new factors - anthropogenic climate change, buildup of toxins in the environment, energy shortages and overuse of the earth's photosynthetic capacity may contribute to the weakening and collapse of the present and future societies.

Water scarcity is a growing crisis, with surface water contamination, groundwater depletion and conflicts over water resources worsening due to erratic rainfall, droughts and floods caused by climate change. The fragile Himalayan ecosystem is increasingly vulnerable due to infrastructure projects like roads, railways and hydropower plants, which have been linked to disasters such as the 2013 Kedarnath and 2021 Rishi Ganga flash floods. India's rivers, including the Ganga and Yamuna, suffer from severe pollution due to industrial waste, dam construction and urban expansion, while large-scale river interlinking projects threaten ecological balance.

Waste and air pollution are growing concerns, with India generating vast amounts of plastic and municipal wastes, but recycling very little. Delhi remains one of the most polluted cities due to industrial emissions, vehicular pollution

and waste burning. Deforestation continues at an alarming rate despite official claims of increased forest cover, with wetlands disappearing and tropical forests being cleared for infrastructure projects. He criticised the flawed development model that prioritizes economic growth at the expense of sustainability, arguing that endless expansion is unrealistic given the finite resources. It calls for a balanced approach that integrates environmental preservation, equity and economic progress to prevent irreversible damage to ecosystems and human well-being.

Prof Dhruba Jyoti Mukhopadhyay, presented a comprehensive overview of climate change, its causes, impacts and potential mitigation strategies. The Earth's average temperature has increased by 1.1 °C since 1850, with 2024 showing a spike in warming, particularly in the Arctic region, which is experiencing the most severe warming. This rate of temperature increase is unprecedented, with the highest mean temperature recorded in 20,000 years. The primary cause of this warming is the increase in greenhouse gases (GHGs) due to human activities, which trap solar radiation and warm the earth's surface and lower atmosphere.



Prof Dhruba Jyoti Mukhopadhyay.

The impacts of climate change are widespread and severe, including significant reductions in Arctic ice, with the lowest area in 1,000 years recorded in 2003, and unprecedented glacier retreat, which has profound hydrological and agricultural impacts. Global mean sea levels are rising at the fastest rate in at least 3,000 years and oceans are warming, becoming more acidic and experiencing changes in chemistry and circulation. Extreme weather events such as heat waves, droughts, floods, cyclones and wildfires are becoming more frequent and intense. These changes also affect biological systems, leading to coral bleaching, loss of biodiversity and increased health risks.

In India, surface air temperatures have increased by 0.7 °C between 1901 and 2018, with a significant rise in heat waves and the country is experiencing increased frequency of droughts and floods, impacting agriculture and water resources. Himalayan glaciers are retreating, affecting water availability and sea levels in the Indian Ocean are rising non-uniformly, with increased cyclones and storm surges. Future projections indicate that global temperatures could rise between 2.4 °C to 5.4 °C by 2100 relative to 1850-1900 levels, leading to catastrophic effects, including more frequent and intense extreme weather events and continued ocean warming and acidification.

Mitigation and adaptation strategies are essential, including building resilient infrastructure, developing early warning systems, promoting green cover, reducing GHG emissions through renewable energy and energy efficiency and implementing carbon sequestration.

The Paris Agreement aims to limit global temperature rise to below 2 °C, preferably 1.5 °C above pre-industrial levels. Global efforts and international cooperation are crucial, with initiatives like the IPCC and the Paris Agreement, although climate finance commitments from developed countries have fallen short. He concluded his talk with a call for increased awareness, climate-friendly lifestyles, government action and international pressure for equitable climate finance and action to address the urgent and catastrophic impacts of climate change.

Seminar 2:

"Artificial Intelligence and its impact on science, education and social life"
Speakers Professor B Ravindran, Department of Data Science and AI, IIT Chennai, and Prof Soumitro Banerjee, Former Director, IISER Calcutta.

Prof Ravindran explored the journey of AI, its transformative impact and the challenges that lie ahead. Artificial Intelligence (AI) has long been a topic of fascination and debate, evolving from early theoretical discussions to sophisticated, real-world applications.

AI's roots trace back to the 1950s when Alan Turing posed the question, "Can machines think?" Since then, AI has experienced cycles of success and hype, with significant milestones like the development of early chatbots such as Eliza. The real game-changer came with the advent of deep learning, a subset of AI that involves stacking layers of features to classify images and solve optimization problems. Deep learning's ability to handle vast amounts of data

and leverage immense computational power has revolutionized the field. Since 2014-2015, deep learning has driven AI advancements, leading to improved performance and a plethora of new applications. Generative AI represents a shift from traditional approaches by asking AI to create new content based on the essence of data. Foundation models take this a step further by learning without explicit supervision, using enormous datasets from the internet. These models have billions of parameters and solve complex optimization problems, demonstrating impressive language capabilities.

Despite its potential, AI is not without flaws. Biases in AI models can lead to prejudiced responses based on race and culture. While technical solutions like reinforcement learning from human feedback aim to address these issues, overcorrections can create new problems. Additionally, cultural biases in AI models can misrepresent other cultures, highlighting the importance of avoiding socially unacceptable biases. Hallucination, where AI generates incorrect or fabricated information, poses another challenge. Though it enables creativity, it also risks spreading misinformation. Deep fakes, which create



Prof B Ravindran.

realistic yet fake images, further complicate the ethical landscape. The environmental impact of AI is significant, with models emitting large amounts of carbon dioxide. Job displacement is another consequence, requiring careful consideration of how AI will affect employment. Furthermore, trust in online interactions is eroding as AI-generated content becomes more prevalent.

He concluded by saying: AI has made remarkable strides, with deep learning and generative AI driving recent innovations. However, biases, ethical concerns and environmental impacts pose significant challenges. As AI continues to evolve, addressing these issues will be crucial for responsible development and deployment.

Prof Soumitro Banerjee in his address said that AI has become an integral part of our lives, shaping the way we interact with technology and each other. However, its rapid advancement has raised several ethical concerns that need careful consideration.

Prof Banerjee said that one of the primary ethical concerns is the source of data that AI systems rely on. Initially, AI systems used curated datasets, but they now feed on data freely available on the internet. This shift means that AI can easily ingest and propagate misinformation.

For instance, if an AI system learns from an email containing false information, it can use that as a valid source. This ease of feeding misinformation into AI systems presents a significant risk, as malicious actors could intentionally flood the internet with false data to mislead AI systems.

AI is often used to maximize profit, which

can lead to harmful societal effects. AI-driven personality profiling on platforms like Facebook is a prime example. AI systems analyse user behaviour to determine what content will keep users engaged, optimizing for maximum screen time and consequently, advertising revenue. This profit-driven optimization can harm society, as it encourages addictive behaviour and prioritizes sensational or fear-inducing content over balanced and informative material.

Being an automation, AI systems are designed to evolve, learning from the data they are ingested as well as the outcomes through reinforced learning. However, this uncontrolled evolution can lead to unpredictable and potentially dangerous outcomes. This lack of control raises concerns about the long-term impact of AI on society and underscores the need for stringent regulation and oversight.

He emphasized that the ethical use of AI requires societal oversight. Unchecked evolution and profit-driven motives can create significant problems, making it crucial to implement robust regulatory frameworks. Like any technology, AI has the potential to revolutionize various aspects of our lives when rightly used for the benefit of the society.



Dr Soumitro Banerjee

Seminar 3:

'War and the Misuse of Science and Technology' Speaker - Dr. Natalya Dinat, Representative of Science for the People, South Africa Chapter.

Dr Natalya Dinat addressed the destructive use of science and technology, particularly in war, agriculture, healthcare, energy and the information industry. She criticised how scientific advancements had been weaponized to justify racism, mass surveillance and political manipulation.

She argued that, despite the perception of science as a neutral and progressive force, it had been instrumental in war and conflict, leading to increased civilian casualties and environmental destruction. She explained that war had profoundly impacted human lives, infrastructure, ecosystems, food security and access to clean water.

Her discussion included the specific case of Palestine, where modern warfare technologies such as drones, 2000 lb



Dr Natalya Dinat

bombs, dum-dum bullets and phosphorus attacks had been used, causing significant civilian casualties. She presented statistics on the political violence in Gaza and the West Bank,

illustrating the scale of destruction and human suffering. Similar patterns of conflict had been observed in Sudan and the Democratic Republic of Congo, where war had caused widespread displacement, loss of life and ecological collapse.

Dr Natalya also raised concerns about the influence of militarism on engineering and scientific research, questioning whether scientists truly had freedom in their work. She argued that rather than pursuing knowledge for the betterment of humanity, many scientific projects had been driven by profit and military interests. She cited historical examples, such as Arthur Galston's work on Agent Orange, to demonstrate how scientific discoveries had been co-opted for harmful purposes despite their original intentions. She also criticized Israeli universities for their involvement in military research, reinforcing colonial and apartheid systems.

The discussion then shifted towards alternatives, emphasizing the need for a people's science agenda. This vision included recognizing indigenous and marginalized knowledge, promoting science that served humanity by addressing essential needs such as water, food, health, housing and employment. Dr Natalya called for science that was anti-racist, anti-casteist and inclusive of all gender and sexual identities. She urged scientists to take a stand against ignorance and injustice in education, governance and international relations.

Historical examples of collective scientific resistance were presented, including the Lucas Plan, where workers facing layoffs in the 1970s had proposed using their

expertise for socially beneficial technologies instead of military applications. The anti-Sentinel missile defense protests in the United States demonstrated how scientists had mobilized against militarization. These examples highlighted the potential for scientific communities to challenge dominant power structures and advocate for ethical, life-affirming uses of technology.

She concluded with a call to action, urging scientists to organize locally, nationally and internationally to challenge the destructive use of science and promote a better, more just world. Dr Natalya Dinat emphasized the urgency of this mission, especially in light of the ongoing wars, climate breakdown and global inequality. She ended her talk with a reminder of the tragic human cost of these conflicts, citing the deaths of at least 16,000 children in Gaza as a pressing reason for scientists to engage in social and political activism.

Science Rally:

At the end of the seminar sessions on the first day of the conference, a science rally was held in the city with the message of science for the good of the society. The rally was taken out from Tagore Theatre to the public park of Manaveeyam Veedhi. Students, teachers, scientists and science activists participated in the rally with a great enthusiasm.

At the Manaveeyam Veethi, a public meeting was held. The chairman of the reception committee Prof. Kurien Isaac presided. The All India President of Breakthrough Science Society, Prof. Dhruva Jyoti Mukhopadhyay, General Secretary Prof. Soumitro Banerjee, science activist Dr. Natalya Dinat, from South Africa, Breakthrough Science Society State President Prof C P Aravindakshan and Secretary Prof P N Thankachan addressed the gathering.



Science Rally

Day 2: Feb 9, 2025

Felicitation:

Day 2 began with a program to felicitate three scientists who have contributed to promoting and defending science. We give below the felicitation messages that were read out.



Prof. J V Narlikar

Prof. J V Narlikar is an internationally acclaimed astrophysicist and cosmologist who has made significant contributions to the science of the cosmos. Along with Prof Fred Hoyle he propounded the steady state hypothesis as an alternative to the Big Bang hypothesis on the evolution of the universe. He was instrumental in founding the Inter-University Centre of Astronomy and Astrophysics as a front-ranking research Institute. He has inspired generations of students to take up a career in science. Professor Narlikar is a spirited fighter against obscurantist and pseudo-scientific ideas currently in Indian society and propagated scientific temper through numerous writings. He has conducted controlled experiments to debunk unscientific beliefs in astrology. He has also conducted scientific experiments during total solar eclipses, involving

thousands of school students, to measure the distance from the sun to the Earth. Such efforts to involve children in real scientific experiments is indeed rare, and goes a long way to make students understand how science works.



Arvind Gupta

Dr. Arvind Gupta is dedicated to the task of carrying science to the people. He has designed a series of basic science experiments using simple tools. These help young children to understand the principles of science, and make them acquainted with the methods of science. His activities have contributed significantly to spread awareness about science among people and attract countless children to studying science.



Alexandra Elbakyan

Ms. Alexandra Elbakyan has a magnificent role in freeing scientific knowledge from the clutches of

monopoly publication houses. Science is a social activity and the scientist creates knowledge only with the support from the society. But today, scientific knowledge is brought under control by the publishers driven by insatiable greed for profit. She fought single-handedly against the capitalist system of keeping scientific knowledge in bondage. By creating the online platform Sci-Hub from which any scientific paper can be downloaded, Ms. Elbakyan has freed scientific knowledge and made it accessible to all. The publishing houses went after her with court cases in different countries (including India) and harassed her in many ways. Still she was not subdued and continued the website Sci-hub. The community of research scientists, particularly from developing countries including India, will ever remain grateful for her contributions.

All three scientists were conferred Honorary Membership of BSS. The Conference also paid homage to the scientists who had departed since the last Conference.

Seminar 4:

'National Education Policy and Changes in Science Curriculum'. Participants - Former Prof. S G Dani, TIFR, Prof Tarun Kanti Naskar, Former Professor, Jadavpur University.

Prof. S G Dani, delivered an insightful speech on the implications of the National Education Policy (NEP) 2020 on science education. His address critically examined the integration of Indian Knowledge Systems (IKS) and the challenges it presents to scientific integrity.



Prof S G Dani

He highlighted the key aspects of NEP 2020, which emphasize incorporating traditional Indian knowledge into the academic curriculum. According to UGC guidelines, faculty members are now required to undergo IKS training, including visits to temples, gurukuls and historical sites. He expressed concern over the inclusion of subjects such as "Vedic Mathematics" and astrology in scientific curricula. He pointed out that references to Jyotishshastra (horoscopic astrology) in astronomy courses could dilute the scientific rigor of education. While Ayurveda and yoga have already been introduced in certain programs, he emphasized the need for scientific scrutiny rather than blind acceptance of traditional claims.

Drawing attention to the controversial Karnataka IKS position paper released in 2022, he noted that the document made claims dismissing the Pythagorean theorem and Newton's apple story as myths. Despite public backlash, its recommendations, such as integrating Bharatiya calendars and Sanskrit-based mathematical formulas, highlight a growing trend of revising historical narratives through a nationalistic lens. While he acknowledged that historical knowledge can be valuable, he

cautioned against overemphasizing nationalistic interpretations at the cost of critical thinking. He also argued that there is a disproportionate focus on ancient India's scientific contributions while neglecting those of other civilizations. Topics like the decimal system, trigonometry and algebra are often presented solely from an Indian perspective, failing to recognize the global nature of scientific progress. He further warned about the increasing ideological influence on educational content. He cited an instance where a suggestion to include references from Nehru's **Discovery of India** was rejected, reflecting a reluctance to engage with diverse perspectives. He cautioned that as political pressures mount, scientific values could face growing threats. In his concluding remarks, he reiterated the importance of maintaining scientific rigor in education. He urged policymakers and educators to uphold evidence-based learning as the foundation of India's educational future.



Prof Tarun Kanti Naskar

Prof Tarun Kanti Naskar delivered a speech addressing the National Education Policy (NEP) 2020 and its impact on science education. His speech focused on the rationalization of

school syllabi, the exclusion of key scientific theories and the increasing emphasis on the Indian Knowledge System (IKS).

He highlighted how the NCERT has removed fundamental scientific topics from high school textbooks under the guise of reducing content load. Specifically, he pointed out the exclusion of Charles Darwin's Theory of Evolution and Dmitri Mendeleev's Periodic Table. He argued that removing Darwin's theory deprives students of a fundamental understanding of biological change over time, an idea that has been at the core of modern science despite historical opposition from religious institutions. Similarly, he emphasized that the periodic table is a cornerstone of chemistry, explaining atomic structure and properties and that its removal severely weakens students' grasp of fundamental scientific principles.

A significant portion of Prof Tarun Kanti's speech was dedicated to the increasing integration of IKS into mainstream curricula. According to NEP guidelines, students from various disciplines, including medicine and engineering, are required to undertake mandatory courses in IKS, covering subjects such as Ayurveda, Yoga, Unani, Siddha and Homeopathy. He expressed concern that such integration may prioritize cultural nationalism over scientific rigor. He noted the establishment of centers and programs across Indian institutes, such as IITs, to promote IKS research and its inclusion in higher education.

He further criticized the ideological motivation behind these changes, arguing that education should not be confined by national boundaries. He

opposed the forced glorification of India's past scientific achievements without factual validation, citing exaggerated claims about ancient India possessing modern scientific knowledge, such as plastic surgery and rocket technology. While acknowledging India's genuine historical contributions to mathematics, surgery and metallurgy, he warned against rewriting history to serve ideological interests.

He emphasized the need to protect scientific integrity in education. He urged the audience to recognize the dangers of removing essential scientific concepts and replacing them with unverified historical claims. He called for a balanced and rational approach to education, where historical knowledge is preserved but does not compromise the teaching of globally accepted scientific principles.

Resolutions:

In the next session, three Resolutions were placed and discussed.

(i) Resolution against the Propagation of unscientific, ultra-nationalist ideas in the name of Indian Knowledge Systems, a part of NEP-2020.

Ms. Adrika read the resolution and Dr. R Gangadhar supported it.

It stated: "Science continues to grow and expand at a rapid pace, transforming people's lives in ways not imagined before. So it is a big challenge to formulate correct policies for science education in these times. While teaching

basic principles of science, care should be taken to ensure that students develop a rational and inquiring mind. When this is achieved, they will be able to assimilate and analyse the vast knowledge which they will encounter in their productive lives.

We have seen that countries which have not promoted scientific thinking in their curricula have fallen by the wayside. They need to seek the help of "developed countries" for their nation-building. In India, thanks to our great renaissance leaders like Raja Ram Mohan Roy, Ishwarchandra Vidyasagar, and many other such rational minds, our education system was made to incorporate modern scientific education. Unfortunately, instead of further updating our educational system, it is being eroded by introducing pseudo-scientific courses, both in our higher education system and in the school curricula, in the name of NEP 2020.

We see an ultra-nationalist fervour in our leaders as we find them pushing a whole lot of outdated and pseudo-scientific topics like astrology, etc., into the syllabus, in the name of reviving the Indian Knowledge Systems (IKS). This is being done in the fields of mathematics, astronomy, architecture, medicine and philosophy, to name a few. In fact, to highlight the emphasis on such outdated ideas, Ph.D. courses have been introduced in "subjects" like Jyotish, Ayurveda Biology and Indian Knowledge Systems. Furthermore, outlandish ideas with no scientific or historical evidence to support them are propagated not only by the top political persons in power but also by Central Government Agencies like UGC, NCERT etc. Some examples

are, holding the Vedic culture to be at least 10000 years old, naming the Harappan civilization as Saraswati civilization and claiming that it was a part of the Vedic culture; declaring that aircraft were invented in ancient India, announcing that the medical science in ancient India practised stem cell therapy, in vitro fertilization and plastic surgery that could implant an elephant head on a human torso, that internet communication was in vogue in Mahabharata time.

School textbooks are rewritten to include such unscientific beliefs and expunge path-breaking discoveries of modern science, like Darwin's Theory of Evolution, and Mendeleev's Periodic Table.

The central government has started IKS centres in more than 18 universities and science institutes, including IITs, all of which are recognised by UGC, NAAC, AICTE, and MHRD. Also, our Indian medicine systems like Ayurveda, Unani and Siddha, which can at most be considered as ancient empirical knowledge, are being combined with the modern medicine system, which is validated through objective scientific procedures.

We acknowledge the great contributions of our ancient Indian savants towards enriching sciences at that juncture in history. However, it should not be considered an independent Indian science which has developed and stood the test of modern scientific logic and screening. Further, it should also be remembered that many prominent Indian scientists like Jagadish Chandra Bose, Acharya P C Ray, C V Raman, Ramanujan, Megnad Saha, P C

Mahalanobis, S N Bose, Anna Mani and many others have contributed to the development of modern science. While promoting our rich heritage, culture and languages (NEP clause 22), we should guard against overzealous claims of our ancient sciences as a 'know-all' entity. All these will only confuse our youth, thereby hindering their pursuit of modern sciences and, thus, their productivity. This Conference, therefore, demands that the propagation of unscientific, ultra-nationalist ideas in the name of IKS as a part of NEP 2020 be immediately stopped."

(ii) Resolution on Centralisation of Science Administration and Funding.

The resolution was read by Dr Siddhartha Bharadwaj and supported by Dr Apurba Senapati.

It stated: "Education and research are the pillars of a nation's progress, fostering innovation, economic growth, and social development. However, recent shifts towards centralization in education administration and research funding, alongside increasing political and corporate influence, threaten the autonomy and integrity of academia and research in India.

The rising political interference in curricula and research agendas through the concentration of decision-making power within government-controlled bodies such as the Anusandhan National Research Foundation (ANRF) and the proposed Higher Education Commission of India (HECI) risks undermining the quality and independence of education

and research. This paves the way for privatization and politicization of higher education.

The central bodies like the UGC are increasingly infringing upon the autonomy of universities and institutions and are dictating curricular structures, course contents and recruitment policies. Earlier, several organizations funded research, which are now combined into a single entity for research funding: the ANRF. Such centralization of research funding is squeezing the scope of financing curiosity-driven basic science research by promoting a few 'thrust areas' to be pursued in the private-public partnership (PPP) model. Additionally, politically driven religious ideologies—such as cow science, astrology, and Vedic science—are being promoted in higher education and research under the guise of the Indian Knowledge System within the NEP-2020 framework, which severely undermines scientific integrity.

This All India Science Conference voices a collective concern at the all-out centralization of education and scientific research and puts forward the following demands.

1. Protect the Autonomy of Education and Research:

Education and research institutions must be governed by autonomous and decentralized bodies composed of experts with notable credentials and free from political or corporate interference. Their decisions on curricula, research, and policies should ensure academic freedom and scientific integrity.

2. Ensure Democratic Governance and Inclusivity:

Independent, expert-led bodies must be entrusted to make policy decisions

through a transparent, democratic process. Teachers, students, and institutions must be included in that process, with the government's role limited to financial support and policy implementation. Institutional governance must be reformed to reduce political interference.

3. Decentralize Research Funding:

Research funding should be distributed across independent bodies to support diverse scientific inquiry. The scope of funding must not be narrowed down to a few "thrust areas" at the cost of curiosity-driven and basic natural and social sciences and technological research.

4. Resist Political and Religious Interference:

Curricula and research should be based on scientific principles and critical thinking. This conference calls upon people to resist political or communal agendas such as promoting unscientific subjects like cow science, astrology, Vedic science, and Vedic mathematics.

5. Safeguard Public Funding for Research:

The reliance on private-sector funding hinders basic research and the free flow of knowledge. Government funding must be increased, at least to 3% of the nation's GDP to ensure long-term, unbiased research that serves the public interest, not corporate profits.

We call on the Government of India to reaffirm its commitment to academic freedom, resist political interference, and ensure adequate public funding for education and research. By safeguarding the autonomy of academic institutions and research bodies, we can ensure that India's educational and research ecosystems continue to thrive,

remain independent, diverse, scientifically tempered and adequately funded and contribute to society's long-term progress."

(iii) Resolution on the aberration of scientific culture and degradation of scientific ethics.

The resolution was read by Mr Raju Acharya and supported by Mr Thabrez Khan.

It stated: "A major problem in the science education scenario is that most people see science as the gateway to a career. Naturally, the essence of science remains elusive. Those who choose a research career also view the pursuit of science merely as a means of career progression.

This phenomenon has far-reaching consequences in higher studies and research. A healthy intellectual atmosphere is often found missing in the higher seats of learning, and there is an aberration of scientific culture. Research scholars sometimes face a stifling situation in many laboratories as they are expected to produce results that suit the career aspirations of their supervisors, even though the necessary equipment or other resources are not available. Discrimination based on caste, creed and gender is not rare. Instead of a democratic atmosphere, the administrative structure in most universities reflects an undemocratic and unscientific mindset. People with talent and performance are often bypassed, and those with questionable credentials are promoted and brought to positions of power. The rule of 'influence' is visible in

all fields of administration, including science administration.

The degradation of scientific ethics is a matter of great worry. Scientific malpractice---plagiarism, fabrication, distortion of results, etc.--- are reported with alarming regularity. All this results from the rat race for career advancement, coupled with the general degradation of ethics and morality in society.

In this worrisome situation, the Breakthrough Science Society, through this conference, appeals to all to view science in its true essence - the excitement of finding out the truth about nature. It appeals to students and researchers to uphold a high standard of scientific ethics. It demands that the central and state governments restore a democratic atmosphere in all educational institutions that is conducive to the free pursuit of excellence. This conference further demands that the universities be provided with adequate resources to conduct cutting-edge scientific research and that research administration be free of bureaucratic practices."

In the post-lunch session, three more resolutions were placed and discussed.

(iv) Resolution demanding an Anti Superstition Act across the country.

The resolution was read by Dr T K Shajahan and supported by Ms Dipti

It stated: "Article 51A (h) of the Indian Constitution mandates every citizen to "develop scientific temper, humanism, and the spirit of inquiry and reform."

Despite this, superstition continues to plague Indian society, causing significant harm, exploitation, and injustice. An individual's belief is different from the kind of superstitious practices that perpetuate harm, exploitation, and discrimination.

In demanding an Anti-Superstition Act, we focus on practices that cause physical, psychological, or financial harm. We often hear about human sacrifices and other forms of ritualistic violence. The most common ones are witch-hunting and related violence, exploitation in the name of faith-healing oracles, and the promotion of unscientific remedies for health conditions.

The absence of a comprehensive national law against superstition allows harmful practices to persist with impunity, hindering societal progress and contradicting the principles of a scientific and rational society. Dr Narendra Dabholkar, a champion of reason and social reform, dedicated his life to combating superstition and promoting scientific thinking, making the ultimate sacrifice for this cause. The success of anti-superstition legislation in states like Maharashtra and Karnataka demonstrates the effectiveness of such laws in curbing harmful practices.

This conference firmly holds that a national Anti-Superstition Act is crucial for fostering a more just, equitable, and scientifically informed India. It strongly urges the Parliament of India to enact a comprehensive and effective National Anti-Superstition Act encompassing all forms of superstition that perpetuate harm, exploitation, and discrimination. The Act should include provisions for the protection of vulnerable groups, such as

women, children, and marginalized communities, disproportionately affected by superstitious practices and enable effective investigation and prosecution of cases related to superstition.

However, we recognize that legislation alone is insufficient to eradicate deeply entrenched superstitious practices. A robust, nationwide science movement is essential for achieving lasting societal change. The enactment of this law will serve as a powerful deterrent and will bolster the science movement by preventing perpetrators of harmful practices from finding refuge within legal loopholes. By explicitly declaring the unscrupulous manipulation of people as illegal, this law will be legally empowering and help effectively confront and punish offenders. In addition, we demand that modules exposing superstitions and unscrupulous practices should be included in the school curriculum. TV shows and advertisements promoting such practices should be banned.

This conference calls upon all scientific organizations, academic institutions, civil society groups, academicians, and individuals to support the enactment and implementation of a National Anti-Superstition Act."

(v) Resolution demanding urgent action on environmental protection and tackling climate change.

The resolution was read by Ms Pooja Sharma and supported by Dr R Venkatesan

It stated: "Humanity's active intervention in nature has become more extensive

and more intensive as civilization progressed. While this engagement has brought technological progress and prosperity, it has also led to significant and often irreversible harm to nature. Since the Industrial Revolution, the unbridled exploitation of natural resources has caused severe environmental degradation, including deforestation, soil erosion, environmental pollution and loss of biodiversity. The impact of these actions is now compounded by the accelerating crisis of climate change, driven primarily by the unchecked release of greenhouse gases resulting from human activity.

As industrialization and profit-driven capitalist production models have prospered, they have also given rise to the destruction of the environment and climate crisis. In many parts of the world, including India, the harmful effects of industrial and agricultural practices—such as deforestation, air and water pollution, and soil degradation—are evident.

Despite existing laws aimed at environmental protection, weak enforcement, political interference and corporate resistance have hindered meaningful progress. Similarly, climate change continues to threaten both local and global ecosystems, food security, human health and the very survival of the human race, with the world's average temperature rising at an alarming rate. Even after the world experienced the devastation caused by the two world wars, imperialist rivalry has led to many local wars in different corners of the globe. Wars not only annihilate people, they disrupt the food chain, destroy local ecosystems, and accelerate climate

change. so movements for environmental protection must go hand-in-hand with pro-peace anti-war movements.

This resolution calls for immediate, coordinated action to halt environmental degradation, mitigate climate change, and adopt measures to save the affected people and secure a sustainable and just future for all.

This Conference Demands:

(1) Strengthening Environmental Protection Laws: The existing environmental laws must be reviewed, made more stringent, and enforced rigorously. Regulatory bodies are to be democratically formed with representation from all stakeholders and need to be adequately funded and empowered to monitor industries, enforce pollution norms and hold violators accountable. Special focus should be given to industries that release harmful pollutants into the air, water and soil.

Effective steps are to be taken (promulgating stringent laws and their strict enforcement) to curb the use of plastic packaging and its indiscriminate disposition in the environment. There is to be legal binding on industries, local government bodies, and medical establishments to adopt eco-friendly waste-management processes.

(2) Safeguarding Forests and Biodiversity: The Forest Conservation Amendment Act of 2023 must be repealed, as it promotes the commercial exploitation of forests and undermines the rights of forest dwellers. Instead, policies should be adopted that prioritize the protection of forests, the

conservation of biodiversity, and the rights of indigenous and local communities who depend on these ecosystems for their livelihoods and protect them.

(3) Protection of Water bodies: Rivers and all water bodies are to be protected from encroachment, illegal sand mining, pollution through discharge of untreated municipal sewerage and industrial effluents and polluting human activity. Unscientific and unmonitored processes like river linking should not be undertaken

(4) Promoting Sustainable Development: Environmental protection must be integrated into all development processes. Manufacturing processes are to follow the “green chemistry” protocol. The Environmental Impact Assessment (EIA) process must be made more transparent, rigorous, and inclusive. Development projects that harm the environment should be actively discouraged, and sustainable alternatives must be prioritized. Tourism is to be strictly controlled in eco-sensitive areas. Environmental awareness and care for the environment should be an integral part of education from the early stage.

(5) Action on Climate Change: Climate change is a global phenomenon that requires global cooperation. Developed countries, which have historically contributed most to greenhouse gas emissions, must take the lead in emission reductions and support developing countries through financial assistance, technology transfer, and capacity-building. A renewed commitment to the Paris Agreement and the implementation of

nationally determined contributions (NDCs) is vital.

(6) Adaptation to and Mitigation of Climate Change Impacts: Governments must invest in infrastructure and strategies to protect vulnerable populations from the impacts of climate change, such as extreme weather events. This includes ensuring that adequate relief is provided to victims of climate-related disasters. Forests must be protected and expanded, with policies that balance both environmental and human needs.

(7) Transition to Renewable Energy: Governments should accelerate the transition to renewable energy sources, such as solar and wind, while reducing dependence on fossil fuels. This includes enforcing legally binding emission standards for industries, promoting public transport by installing efficient and comfortable public transport networks and widespread adoption of electric vehicles to reduce the carbon footprint.

(8) Raising public Awareness and Mobilization: Public awareness of climate change and environmental degradation must be prioritized. People are to be urged to individually adopt eco-friendly and climate-friendly practices and curb wasteful consumption of energy, consumer goods and food. Civil society and organizations like Breakthrough Science Society should work together to build movements that demand climate action on the part of the governments. Through education and grassroots organizing, citizens must hold governments accountable and push for science-based, effective solutions to the climate crisis.

We call upon:

(1) Governments to review and strengthen existing environmental protection laws, ensuring their strict enforcement and supporting regulations that protect the environment over short-term economic gain.

(2) Regulatory Bodies to monitor environmental compliance and hold industries accountable for pollution and degradation.

(3) Industry and farm owners to adopt responsible production practices that prioritize sustainability and minimize environmental harm.

(4) International Community to honor commitments made in climate accords, especially the Paris Agreement, and to press for stronger action from developed nations in reducing greenhouse gas emissions and providing support to developing countries.

(5) Public and Civil Society to mobilize in support of these efforts, through awareness campaigns, direct action, and public advocacy, demanding that environmental protection and climate action remain top priorities for governments worldwide.

Breakthrough underscores its commitment to protecting the environment and promoting adaptation and mitigation measures for tackling climate change. Whenever and wherever there is an attack on the environment and climate, the Breakthrough Science Society vows to fight and build up people's movements against it. We are not against development; we stand by development with full concern for the protection of the environment and climate. Let us act now—together—to

safeguard the planet, its ecosystems, and its future generations from the grave threats posed by environmental degradation and climate change. The window for meaningful action is closing, and failure to act will have catastrophic consequences for both humanity and the environment."

(vi) Resolution against war and destructive use of Science and Technology.

The resolution was read by Dr Kanai Barik and supported by Dr Tapan Kumar Si.

It stated: "Recognizing the transformative potential of science to address humanity's greatest challenges—such as poverty, disease, hunger, and climate change—we express grave concern about its misuse for destructive purposes. While science has greatly improved lives, its application in warfare, environmental degradation and violations of human rights threatens global security and the planet's future.

Science has made significant strides in improving human health, reducing infant mortality, combating anti-microbial resistance and revolutionizing technology in fields such as communication, agriculture, transportation and energy. Through scientific research, we have gained a deeper understanding of climate change, offering potential solutions for a sustainable future. However, we must also acknowledge that the development of weapons, including nuclear and chemical arms, has caused immense harm, with ongoing conflicts—such as in Gaza—highlighting

the catastrophic misuse of science. The growing focus on military technologies, rather than human welfare, diverts resources from addressing critical global challenges. Additionally, the weaponization of emerging technologies, such as artificial intelligence and genetic engineering, raises serious ethical concerns about privacy, inequality and human rights violations.

In response to these challenges, we resolve to take the following actions:

(1) Direct Science Towards Peace and Welfare, Not for War and Destruction:

In nearly every country, a significant portion of R&D funding is allocated to advancing military technology and supporting the military-industrial complex under the pretence of national defence. We call for an immediate cessation of such spending to end the militarization of science and technology and urge that these resources be redirected toward research and innovation that directly benefits society, improving the lives of ordinary people through meaningful advancements in science and technology.

(2) Establish Ethical Standards and Regulations:

International agreements and regulatory frameworks should be developed for emerging technologies—such as artificial intelligence, genetic engineering and surveillance technologies—to ensure their responsible use and prevent violations of privacy, human rights and environmental harm.

(3) Invest in Sustainability and Environmental Protection: Research and technological advancement must be

directed toward clean energy, sustainable agricultural practices, and climate change mitigation. This will ensure that the future of humanity is not compromised by environmental degradation.

(4) Promote Ethical Education:

Educational institutions must integrate ethics into science curricula, ensuring that future generations of scientists are aware of the broader social, ethical and environmental implications of their work.

(5) Democratize Science for All:

Efforts must be made to ensure that the benefits of scientific progress are accessible to all people, particularly marginalized communities and that global inequalities are reduced by investing in health, education and sustainable development.

(6) Ensure Accountability in Scientific Research:

There must be transparency in the allocation of research funding, ethical review processes and the objectives of scientific projects. The Govt and the institutions should be held accountable for ensuring that their work serves the broader good of humanity and the planet.

We call upon:

(I) Governments to commit to funding and supporting scientific initiatives that address the most pressing global challenges and to reject research that contributes to war, environmental harm, or inequality.

(II) Scientists to adopt and advocate for ethical practices that align with principles of peace, sustainability and human dignity.

(III) Educational institutions to prioritize ethical training in science curricula and

ensure that scientists are prepared to make responsible decisions for the common good.

(IV) The global community to stay informed, engage with scientific advancements responsibly and hold leaders and institutions accountable for the destructive use of science.

Science holds immense promise for solving the world's problems, but only if it is used responsibly and ethically. We must ensure that scientific progress benefits all of humanity, protects the planet and fosters a peaceful and sustainable future for generations to come. Let us unite to uphold this vision, recognizing that the true measure of scientific achievement lies not in its power to destroy but in its capacity to create and uplift humanity.

Cultural programme:

The audience was treated to a wonderful cultural program in the evening by a music team led by Mrs. Gayathri Swaminathan, which offered an absorbing rendition of South Indian classical music.



Music programme

Day 3: Feb 10, 2025

Third day began with the report of the General Secretary. Prof Soumitro Banerjee, General Secretary, BSS, placed the organisational report of the society from 2018-2025 (till January).



Delegate session

It was followed by the statement of Income and expenditure of the

organisation by Mr. Asish Samanta, Treasurer, BSS.

Delegates to the conference spoke exhaustively on the organisational report and thereby suggested several amendments. A Presidium composed of esteemed senior members of the society was constituted in order to incorporate the valuable suggestions of the delegates. The Presidium consisted of Prof Dhrubojyoti Mukhopadhyay, Mr V P Nandakumar, Mr Debasish Roy, Prof P N Thankachan, Prof Soumitro Banerjee & Prof Nilesh Ranjan Maiti. A few changes in the constitution were suggested and adopted in the conference by voting.

The next session started with the proposition of the new members of the

All India Executive Committee (AIEC) and the All India Council by Prof Dhrubajyoti Mukhopadhyay. The names of the members of the editorial board of English & Hindi organ were placed subsequently for consideration. All these propositions got accepted through majority votes of the delegates.



Voting

Prof Dhrubajyoti Mukhopadhyay and Prof Soumitro Banerjee were re-elected as the President and General Secretary



Newly elected President and General Secretary

respectively for the next 4 years. Besides, an All India Council was elected.

The Final session was addressed by Mr Debasish Roy, Vice-president, BSS and one of the founding organisers of BSS. Mr. Roy emotionally narrated the long & hurdlesome journey of BSS. He said



Mr Debasish Roy

that the journey of BSS started initially by publishing the magazine 'Breakthrough - A Journal on Science & Society' way back in 1984. But its organisational shape was given through an All Bengal Science Conference held in 1995.

While narrating the present deploring condition of science and education in our country he urged the delegates to take initiative to develop 'Science Learning Centres' in different parts of our country. He said that it is the prime responsibility of every activist of the BSS to take this mission to the people. Mr. Roy's speech imbued with emotion and sense of duty urged upon the delegates to unleash their own initiative after returning back to their respective states.

The 3rd All India Science Conference came to an end with the speeches of our beloved President and General Secretary.

Public events in the Tagore Theatre compound:

As part of the conference, a host of events for the general public and students were organised in the Tagore Theatre compound. These included chart exhibitions, sun spot and night sky viewing using telescopes, exhibition



Poster exhibition.

stalls, book stalls, magic show, public lectures, quiz programs and workshops for teachers. Hundreds of students, teachers and the general public participated in these events.

A little way into the campus, a chart exhibition on Darwin's Theory of Evolution and another on the life and works of Madam Curie were displayed.



Sky watching through telescopes

A little further in an open area, a number

of telescopes were set up for sun spot viewing and night sky viewing. It was a major attraction for the general public. Big crowd was present around the telescopes, particularly after dusk when night sky viewing took place.

There were two exhibition pavilions. In the Madam Curie pavilion, exhibitions and magic shows were conducted. A number of magic shows of about 30 minutes duration were performed by students of the Different Art Centre, run by the famous magician Gopinath Muthucaud. The exhibition stalls consisted of "Science experiments for entertainment and enlightenment" by



Magic show.

Galileo Science Centre Kottayam, "Chemical magic" by BSS, Telescope making workshop by BSS, Science demonstrations by IISER and IIST Trivandrum and stalls by CDAC, C-DIT, CET and ICT Academy.

The stall of Galileo Science Centre was a major attraction for children. Here, children could see simple experimental models on conservation of momentum, Bernoulli's principle etc. CET's self-developed vehicle Aetha 6.0, C-DIT's

Guncraft Virtual Reality, IIST's non-contact measurement system called Fringe Projection Profilometry in optics, planetary geology, 3D printed space



Galileo Science Centre stall

bricks etc were the attractions in the stalls. The exhibition was inaugurated by Prof. Soumitro Banerjee, former Director, IISER, Kolkata.

The Albert Einstein pavilion consisted of exhibition stalls of ISRO, RGCB, Keltron and a book stall set up by BSS.

In the ISRO stall, every major step in India's space sector was presented. Models of several rockets, including Rohini 75 which was first launched by India, ASLV, PSLV and GSLV were displayed in the stall. The large still model of Chandrayaan was a major attraction in the exhibition. Satellites like Aryabhata, GSAT-12 and Cartosat-2



ISRO stall

were also displayed there. The Keltron, RGCB and C-DAC displayed their innovations and products.

The G.S Padmakumar pavilion was the



Winners of the quiz program being presented with prizes.

one where public lectures, teachers workshop and quiz programs were conducted.

On Feb 8, Quiz competition was conducted for students of class 8, 9 & 10. A total of 31 school teams participated in an exciting competition held in the G.S Padmakumar pavilion. Eight teams were selected to the final round. Prizes were presented to the winners.

Workshop for teachers:

A workshop for teachers was held on the 9th from 9.30 am to 5 pm.

Prof. Kuruvila Joseph, Registrar and



Prof Kuruvila Joseph



Dr Riji N Das

Dean IIST, inaugurated the event. Dr Riji N Das, ICT Academy of Kerala Knowledge Office made a presentation titled 'Generative AI as Teaching Aids'. Dr. Sarita Vig, Professor, IIST, conducted a session titled 'Dynamic Teaching of Science with Interactive Demonstrations' in the workshop.

Prof. Kuruvilla Joseph opined that teachers should motivate students. He asked teachers to instill curiosity and enthusiasm in students. He said that our school education system is in a neglected state, the focus is on passing exams and not developing critical thinking. Prof. Kurian Isaac, former professor, IIT Bombay suggested that



Dr Sarita Vig

teachers need to create an inquiry into how the world works. Dr Neena Thomas welcomed the gathering and Dr Adarsh,

District President of Breakthrough Science Society, Thiruvananthapuram thanked the speakers and the teachers who participated.



Dr Adarsh speaking.

In the concluding session in the evening, Dr. Vaisakhan Thampi, a prominent science campaigner and a professor at M.G. College, Trivandrum, delivered a public lecture on the topic "When Science Leaves the Classroom: Theory Vs Practice"



Dr. Vaisakhan Thampi addressing

On the last day, Feb 10, a special program titled "Insights from Senior Scientists" was held in the morning. Dr. P R Harikrishna Varma, Head, Department of Biomedical Technology, Sree Chithira Thirunal Institute of Medical Science and Technology spoke on the topic "Scientific advances that sustain life and livelihood". He said that crucial research is being



Prof. Harikrishna Varma, SCTIMST speaking.

done in the field of biomedical device manufacturing and the new products have led to great leaps in the field of human health today. He showcased the achievements of SCTIMST in developing a variety of biomedical devices and equipment.

Prof. Kana M Sureshan, Department of Chemistry, IISER, Thiruvananthapuram, gave a talk on “Chemistry everywhere”. He opined that the advances in chemistry have played a crucial role in the progress of mankind. This science was able to produce new chemicals as well as produce medicines to combat diseases. This increased the lifespan of humans. It was scientific agriculture and the application of chemical fertilizers to agricultural crops that helped to overcome the food shortages and severe



Prof. Kana M Sureshan

hunger that occurred in all countries in the early 20th century. He explained that the exaggerated propaganda about organic farming by obscuring the revolutionary changes brought about by chemistry in the agricultural sector, are creating misconceptions among the people.

Pre-conference events:

A good number of pre-conference events were conducted all over Kerala, particularly in and around Trivandrum heralding the 3rd All India Science Conference on 8 - 10th February, 2025, organised by Breakthrough Science Society.

From February 1 to 6, a team of good number of volunteers visited various colleges and schools in and around Trivandrum inviting all the students and teachers to visit the exhibition, to take part in the quiz competition and to take part in the workshop for teachers.

There was a tremendous response from the schools and colleges. Sunspot viewing and night skywatch using telescopes were organised as part of the campaign. They were participated with great enthusiasm.



Sky watch at Techno park, Trivandrum

From Feb 1 to 7 a vehicle propaganda was conducted in and around Trivandrum. A decorated vehicle carrying a team of volunteers moved to different places to propagate the scientific outlook and also addressing the people about the significance of the all India science conference. With the help of local organisers sky-watching programmes and experiments show were also conducted in some spots.



Magic show at St.Xaviers School, Peyad, Trivandrum.



Prof Saji K P addressing people during vehicle campaign

On February 6, a well decorated bike rally was organised from Palayam via State Secretariat, East Fort, Thambanoor to Manaveeyam Veedhi. This rally attracted the attention of the general public and science loving people.



Bike rally

A campaign was conducted in the city on a decorated double decker bus on February 7. A team of the local volunteers including a few delegates from other states who had arrived on the 7th moved in the bus to different locations in the city announcing the conference.



Double decker bus campaign in Trivandrum city.



Volunteers announcing about the conference.

All India Committee

Breakthrough Science Society

Committees elected at the All India Science Conference, 8-10
February, Trivandrum, Kerala

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