

Sir Jagadis Chandra Bose

Sir Jagadis Chandra Bose made seminal scientific discoveries and technological inventions in electromagnetism and plant physiology.



Despite being free people for more than 60 years now, Indians are yet to develop the tradition of remembering and honouring their great savants of pre-Independence times. One example of such neglect relates to Jagadis Chandra Bose (1858-1937), arguably the first 'modern' scientist to have emerged from India. This year marks the 150th birth anniversary of J.C. Bose, who made seminal scientific discoveries and technological inventions at the world level, in two seemingly unconnected areas of science and technology — electromagnetism and plant physiology. This was unique for a modern scientist.

In 1895, Bose successfully demonstrated in public in colonial Calcutta the wireless transmission of electromagnetic waves. Generating waves using a self-designed and built transmitter at one end of a link and sending them to a similarly built detector located 75 feet away, through intervening obstacles such as the body of Lieutenant General Mackenzie who commanded the British troops in the Calcutta garrison, he set off an explosion in a cache of gunpowder at the other end.

That Bose built all the equipment in the abysmal conditions that existed at the University of Calcutta then, and the country as a whole, in the 1890s makes the achievement even more mind-boggling and creditworthy. Over the next decade, Bose obtained four U.S. and U.K. patents for his invention with the aid of friends.

It took some five years more for a technician of mixed Italian-Irish parentage, Guglielmo Marconi, to make a similar public demonstration. In the heyday of imperialism, the Nobel Prize for physics was awarded to 35-year-old Marconi and a 59-year old German physicist from Strasbourg, Karl Ferdinand Braun, "in recognition of their contributions to the development of wireless telegraphy."

Bose was not given the prize although he had published his results in leading international journals and lectured at the Royal Institution in London in 1897 at the invitation of his teacher, Lord Rayleigh, one of the most distinguished British scientists of the time. In 1899 Bose read a paper at the Royal Society in London, 'On a Self-Recovering Coherer and the Study of the Cohering Action of Different Metals,' on his invention of the coherer which used conductors separated by mercury. In the paper, which was published in April 1899, he wrote: "For very delicate adjustments of pressure, I used in some of the following experiments an U-tube filled with mercury, with a plunger in one of the limbs; various substances were adjusted to touch barely the mercury in the other limb. ... I then interposed a telephone in the circuit; each time a flash of radiation fell on the receiver the telephone sounded." Performing a series of experiments, Bose concluded that "there can be no doubt that the action was entirely due to electric radiation."

More than two years later, Marconi transmitted radio waves across the Atlantic, using Bose's coherer — with nary a mention of Bose. Academic honours such as a D.Sc. by research from London University, a knighthood in 1917 and a membership of the Royal Society of London in 1920 that were conferred on Bose did little to affirm his pioneering status as the father of wireless. Ironically, in a book by Orrin Dunlap, which Marconi personally edited, a page and a half is devoted to Bose, who is acknowledged by Marconi to have provided crucial support at a critical juncture when he needed it most.

Partial amends were made in 1998 when the Institution of Electrical and Electronics Engineers (IEEE),

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Cultural Calendar for April 2009

April 6

Bharatha Natyam lecture cum demonstration by Padmashri Dr. Ananda Shankar Jayant, Directress, Shankarananda Kalakshetra, Hyderabad, India
Venue & Time: ICC 6.00 p.m.

April 21

Films: The Shillong Chamber Choir Citizen of the World - Khan Abdul Gaffar Khan (Documentaries in English)
Venue & Time: ICC 6.00 p.m. Duration: 1hr

April 24

Carnatic vocal music recital by Ms. S. Arunthathy, MA Music, Tanjore University
Venue & Time: ICC 6.00 p.m.

(Admission to all programmes is free and on first come first served basis except programmes)

April 28

Films: Pather Panchali - A Living Resonance Renewing India (Documentaries in English)
Venue & Time: ICC 6.00 p.m. Duration: 1 hr

April 30

Films: Sampurn Ramayan - Episodes from 1-9 (In Hindi)
Venue & Time: ICC 5.30 p.m. Duration: 3 hrs

New York, a global professional academy in the field, announced: "Our investigative research into the origin and first major use of solid state diode detector devices led to the discovery that the first transatlantic wireless signal in Marconi's world-famous experiment was received by Marconi using the iron-mercury-iron-coherer with a telephone detector invented by Sir J.C. Bose in 1898."

With these revelations, belated though they are, we may safely say that Bose, and not Marconi, was the discoverer and demonstrator of wireless radio propagation through free space and thus the father of radio, television and all other forms of radio communication including the Internet. The IEEE inducted Bose into its Wireless Hall of Fame.

Against this background, the Centre for the Philosophy and Foundations of Science, New Delhi, led by its Director Ranjit Nair, teamed up with Christ's College Cambridge (of which Dr. Nair is an alumnus) to organise at the college a symposium titled "Beyond Frontiers: From Physics to Plant Sciences," on December 6, 2008 to mark Bose's 150th birth anniversary. At the symposium, Cambridge scientists expressed their appreciation of Bose's pioneering contributions. The physicist E.C.G. Sudarshan spoke on Bose's work in electromagnetism, while distinguished plant geneticist M.S. Swaminathan (also a Cambridge alumnus), spoke on green genes to combat global warming.

A bust of Bose made by a Kolkata sculptor was unveiled by India's High Commissioner in London, Shiv Shankar Mukherjee. Two Kolkata physicists, Bikash Sinha and Sibaji Raha, respectively Directors of the Saha Institute of Nuclear Physics and the Bose Institute (founded by Bose in 1917), spoke. The Master of Christ's College, Frank Kelly, welcomed the gathering and Dr. Ranjit Nair proposed a vote of thanks. Leading scientists from the U.K. such as David King, former Chief Scientific Adviser to the British Government; Martin Rees, President of the Royal Society and Master of Trinity College Cambridge; and Partha Dasgupta, Professor of Economics at Cambridge, were present. (So was this writer.)

In a curious twist to the tale, Marconi's grandson, the space physicist Francesco Paresce Marconi, while on a visit to Kolkata in 2006, expressed his astonishment on finding at the Bose Institute the

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SANDESH

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Indian Cultural Centre

133, Baudhdhaloka Mawatha,
Colombo 4, Sri Lanka
Telephone: 2500014, Fax: 2598674
E-mail: icc@sltnet.lk
ICCR Website: www.iccrindia.org

April 2009

RAM KUMAR, LANDSCAPE OF SOUTH ISLAND 3, 2000 OIL ON BOARD, 30X40 INCHES

Past Events

6th February

Book launch - Books on music authored by Shasthrapathi Anil Mihiripenne



Three books on music authored by Shasthrapathi Anil Mihiripenne and a CD of the maestro were launched at the Indian Cultural Centre. The book launch commenced with a

speech by Prof. Ajith Abeyasekera which was followed by the speeches of the Sangeet Visharad Chitral Panditha, Chief Guest Director (ICC), Dr. Praneeth Abeyesundara & by Prof. Sanath Nanadasiri. The book launch was followed by a flute recital by Shasthrapathi Anil Mihiripenne. The book launch concluded with a reception.

11th February

Nav Pratibha – a display of new talent in Indian classical music and dance, a performance by the students of the Indian Cultural Centre

Nav Pratibha – A display of new talents in Indian classical music & dance - performances on Sitar, Violin, Tabla & of Hindustani, Carnatic vocal music, Kathak & Bharatha Natyam dance recitals by the students of the Indian Cultural Centre held at the Kularathne Hall, Ananda College on 11th February. The event was presided over by the Deputy High Commissioner for India Shri Vikram Misri. Hon. S. Alavi Moulana, Governor of Western Province graced the occasion as the Chief Guest

The evening started off with a classical sitar recital in which the students trained by Dr. Nirmala Kumari Rodrigo presented an item, "Sitar Sandhwani", a composition based on raag Hansadhvani set to Madhyalaya Teental which was composed by their guru Dr. Nirmala Kumari Rodrigo.



The classical sitar recital was followed by the Carnatic vocal music recital by the students trained by their guru, Kalasuri Ms. Arunthathy Sri Ranganathan. It started off with a "Keerthanam - Shri Vicknarajan" which was followed by a bhajan and concluded with a "Thillana".



The Carnatic vocal music recital was followed by a Violin performance based on raag Bilawal an instrumental composition by the students trained by their guru Visharadh Somasiri Illesinghe.



Next, Hindustani Vocal music students trained by Dr. Premadasa Mudunkotuwa presented a solo item in raag Malkauns, this was followed by a group recital - Rabindra sangeeth.



This was followed by a tabla recital by the students of the Centre trained by their guru Visharadh S.W. Randoowa. Aspects of tabla playing Uthaa, Mukhda, Tukda & Gat in teen taal were displayed.



The instrumental and vocal music recitals were followed by dance recitals. The Bharatha Natyam dance students trained by Ms. Vasugy Jegatheeswaran commenced the dance recital with "Rupaha Alarippu" and a dance item for the song "Vaishnav Janatho".



Next, the Kathak dance students trained by Ms. Moksha Samarasooriya presented a "Dhoon"

There after, there was a Bharatha Natyam dance recital by the students trained by their guru Ms. Subashini Pathmanathan. They started with a dance performance for the song of Subramaniya Bharathiyar and concluded with a "Thillana".

Past Events ...Contd.

18th February
"Thiagarajar Aradhana" – Carnatic Music Festival



The Indian Cultural Centre organized "Thiagarajar Aradhana" – Carnatic Music Festival on 18th February. Musicians from various parts of the Island gathered at the Centre to sing & play Sri Thiagarajar's compositions as homage to the great musician. The programme commenced with a brief introduction & welcome by the Director of the Centre – Shri Dinkar Asthana followed by a speech by the Chief Guest Hon. Hemakumara Nanayakkara, Minister for Agriculture, Sri Lanka and a in-depth introduction about the festival by Kalasoori Arunthathy Sri Ranganathan. The Thiagarajar Aradhana is an annual event held in Thiruvaiyaru, India.

19th February
Rabindra sangeet



The members of the Tagore society presented a Rabindra Sangeet recital at the Centre on 19th February. The program commenced with a speech by the President of the Tagore society, Mr. Kamal Premadasa. Several past pupils of Shanthiniketan, India and the members of the society sang some 15 songs of Tagore. The evening was greatly enjoyed by the audience gathered at the Centre.

27th February
SAARC Painting Exhibition



A painting exhibition of the artists from SAARC countries held at the National Art Gallery, Colombo 07. Around 25 works were displayed from 27th February to 7th March 2009. It was inaugurated in the presence of Ministers from SAARC countries who were in Colombo for SAARC Foreign Ministers' meeting.

Sir Jagadis Chandra Bose.. Contd.

coherer that his grandfather had used to receive the trans-Atlantic wireless signal. "The instrument was critical to radio communication," he said. On another visit to Kolkata some weeks ago, the grandson is reported to have said that while Bose was a Professor of Physics of international repute, his grandfather was a technician, who nonetheless deserved credit for turning Bose's discovery and the equipment he invented into an industrial innovation. He admitted it was unfair that Bose was overlooked by the Nobel Committee.

By crossing the boundaries of physics into plant physiology, Bose seemed to some of his dogmatic contemporaries a dangerous heretic. But the more perceptive among them saw him to be a visionary. One must not forget that the distinction between living and lifeless matter was by and large taken for granted among his scientific and lay contemporaries. It required courage and belief in oneself to demonstrate similarities in the electrical responses of living matter and lifeless matter. His theory of the ascent of sap as being due to electromechanical processes involving pumping within living plant cells took six decades to be verified experimentally.

The symposium, and the unveiling of a bust of Jagadis Chandra Bose in his Cambridge alma mater, mark a milestone in the way Indian scientific capabilities are perceived worldwide. It is perhaps the only case so far when an iconic British institution like Cambridge University saw it fit to commemorate an outstanding Indian scientist of colonial times 150 years after his birth in British India. Can we say that at long last, the prowess and international image of our country are changing among scientific circles? We have every reason for cautious optimism.

(Ashok Parthasarathi is a former scientific adviser to Prime Minister Indira Gandhi and was Secretary to various scientific departments of the Government of India. He acknowledges the contribution made to this article by Dr. Ranjit Nair, Director, Centre for the Philosophy and Foundations of Sciences, New Delhi.)

Courtesy: Ashok Parthasarathi, The Hindu

LIBRARY

Recent Library Accessions

History of Munneswaram Temple

Sarma, B.S.
Dehiwela : Sri Sankar
Publications, 2007, 77p.

Essays on Orissan Art

Williams, Joanna
Orissa : Prafulla, 2005, 272p.

Bollywood Melodies: A History of the Hindi Film Song

Anantharaman, Ganesh
New Delhi : Penguin Books, 2008, 261p.

English-Hindi Dictionary: Detailed Dictionary of old & new words

Bahri, Hardev (Dr.)
Delhi : Rajpal & Sons, 2001, 948p.

Films in April



The Shillong Chamber Choir

Neil Nongkyrih studied at the Guild Hall of Music and Trinity College, London. After working as a concert pianist for thirteen long years in Europe, he returned to Shillong, Meghalaya and started the Shillong Chamber Choir, just to gather people around and play variety of music. The Choir is unique. Along with hymns, they also sing Mozart and Khasi opera, oratorio composed by Neil Nongkyrih. Neil Nongkyrih wanted his music to reach out to the underprivileged children.



Citizen of the World - Khan Abdul Gaffar Khan

Khan Abdul Gaffar Khan was popularly known as "Frontier Gandhi". A true Gandhian in his style, work and action, Khan Abdul Gaffar Khan remained lifelong, a strong force in Pakistan. Khan Abdul Gaffar Khan stands out as of a beacon of hope in this dark age of terrorism. His "Red Shirt Movement" represented his belief in the strength of non-violent dissidence.



Pather Panchali - A Living Resonance

The film highlights Pather Panchali's impact on the contemporary Indian Cinema and a tribute to the great filmmaker.



Renewing India

The film focuses India's leading role in renewable Energy: Renewables are defining the energy future of India. Sun, wind, water and biomass are fuelling this drive as emerging source of energy. Spanning across the states of Uttarakhand, Maharashtra, Gujarat, West Bengal, Karnataka and Kerala, this film takes you through some of the milestones in India's journey on the path of alternatives.



Sampoorn Ramayan

Sampoorn Ramayan was the first mythological serial shown on the Indian television, created by Dr. Ramanand Sagar. The serial portrays the story of Lord Ram in a most aesthetic manner and carried a lot of devotional value. Sampoorn Ramayan gives a lesson on Deep rooted culture of India, traditions and the heritage of pure ethics and principles.