

# Jagadish Chandra Bose

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**In news :** The 17th Annual JC Bose Memorial lifetime achievement award was conferred on six people recently

## About the award

- **To commemorate the Birth Centenary of the great Indian Scientist Prof. J.C.Bose Indian Science Congress Association(ISCA) instituted this award in 1994** to be given in every alternate year to honour a distinguished Scientist of the country in recognition of his outstanding contribution.
- The award carries a Gold Medal and Certificate.
- The awardee is entitled to TA (Air Fare-economy class – within the country) as per Indian Science Congress Association(ISCA) rules for attending the Annual session of the Science Congress in which he/she will receive the award.
- The award is presented to the recipient either in the inaugural or Valedictory function of the Annual Session of The Indian Science Congress Association.
- Nominations for the Birth Centenary Award are invited from Members of ISCA Council.

## About Jagadish Chandra Bose

- Sir Jagadish Chandra Bose CSI CIE FRS was a biologist, physicist, botanist and an early writer of science fiction.
- He was born November 30, 1858, Mymensingh(now in Bangladesh)
- He pioneered the investigation of radio and microwave optics, made significant contributions to plant science, and laid the foundations of experimental science in the Indian subcontinent
- The **Institute of Electrical and Electronics Engineers**

- (**IEEE**) named him one of the fathers of radio science
- His work was also commemorated by IEEE as the oldest “milestone achievement” from Asia
  - Bose is considered the father of Bengali science fiction, and also invented the crescograph, a device for measuring the growth of plants. A crater on the moon has been named in his honour
  - His invention of highly sensitive instruments for the detection of minute responses by living organisms to external stimuli enabled him to anticipate the parallelism between animal and plant tissues noted by later biophysicists.
  - **Bose’s experiments on the quasi-optical properties of very short radio waves (1895) led him to make improvements on the coherer, an early form of radio detector**, which have contributed to the development of solid-state physics.
  - To facilitate his research, **he constructed automatic recorders capable of registering extremely slight movements**
    - These instruments produced some striking results, such as **Bose’s demonstration of an apparent power of feeling in plants**, exemplified by the quivering of injured plants.
  - He was the first Asian to be awarded a US patent (No. 755840) in 1904. Bose and the legendary mathematician Ramanujam were also the first Asian fellows of the Royal Society, London as well as those of Vienna and Finland.
  - He was a member from Asia on the International Committee on Intellectual Cooperation of the League of Nations along with Einstein, Curie and Millikan.
  - The Indian Botanic Garden at Shibpur was renamed in his honour in 2009

### **Timeline of his achievements**

Following is a brief timeline of his scientific activities.

- **1894 – 1899:** Created radio-waves as short as 5mm (now better known as microwaves and are used in radars, ground and satellite communication, remote sensing).
  - Also devised a portable apparatus (10" x 12") for the study of their optical properties.
  - In 1895, he was the **first to demonstrate the wireless transmission and reception of electromagnetic waves at Presidency College** (now Presidency University), Kolkata.
- **1899 – 19002:** Initiated detailed **study of coherer leading to his discovery of the common nature of the electrical response to all forms of stimulation**, in animal and plant tissues as well as in some inorganic models.
  - **In 1900**, his **paper titled "On the Similarity of Responses in Inorganic and Living Matter"** at the International Congress of Physics, Paris garnered huge appreciation.
- **1902 – 1907:** He continued efforts to device inorganic models of the biophysical phenomena underlying electrical and mechanical responses to stimulation, the transmission of excitation in plant and animal tissues and of vision and memory.
- **1907 – 1933:** During this period he devoted himself mainly to the **study of response phenomena in plants**, the complexity of whose responses lies intermediate between those of inorganic matter and animals.
  - Inspired by lofty nationalistic ideals, on 30'th November 1917, he founded the **Bose Institute in Calcutta**. On this occasion, he delivered his famous address "**The voice of life**" and dedicated the institute to the service of the nation.
  - Swami Vivekananda, Sister Nivedita, Sara Chapman Bull and Rabindranath Tagore were among those who inspired and supported J. C. Bose in his endeavours.

## **Bose Institute**

- Bose Institute was set up in 1917 by Sir Jagadish Chandra Bose (1858 – 1937), the founder of modern science in the Indian subcontinent.
- It is Asia's first modern research centre devoted to interdisciplinary research and bears a century old tradition of research excellence
- He served as the Director of Bose Institute from its inception until his death.

## **His books include**

- Response in the Living and Non-Living (1902)
- Plant response as a means of physiological investigation, 1906
- Comparative Electro-physiology: A Physico-physiological Study, 1907
- Researches on Irritability of Plants, 1913
- Life Movements in Plants (vol.1), First Published 1918, Reprinted 1985
- Life Movements in Plants, Volume II, 1919
- Physiology of the Ascent of Sap, 1923
- The physiology of photosynthesis, 1924
- The Nervous Mechanism of Plants (1926).
- Plant Autographs and Their Revelations, 1927
- Growth and tropic movements of plants, 1929
- Motor mechanism of plants, 1928

## **Do you know?**

### **Indian Science Congress Association(ISCA)**

- Indian Science Congress Association(ISCA) is a premier scientific organisation of India with headquarters at Kolkata, West Bengal.
- The Indian Science Congress Association (ISCA) owes its origin to the foresight and initiative of two British chemists, namely, Professor J. L. Simonsen and Professor

P. S. MacMahon.

- The association started in 1914 in Kolkata and it meets annually in the first week of January. It has a membership of more than 30,000 scientists.