

SIR JC BOSE AND HIS EXPERIMENTS

From the viewpoint of pertinence

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INDIA was impregnated with a bunch of true cabochons in the nineteenth century, amongst which Sir JC Bose is one of them who has kept an immovable imprint in front of the global scientific fraternity with his loads of research-based achievements and experimental manoeuvres. He had to face constant scrimmages to execute a few fundamental scientific feats. Acharya Bose had made a structured bequest regarding contemporary research in physics and various biological phenomena.

During his variegated research career, Prof. Bose fabricated a few novel instruments from scratch to meet the need for several experiments.

For future 5G broadband mobile communication networks, the use of millimetre-wave has become the primal linchpin now as bandwidth shortage is being experienced by wireless communication. The recipient of the DSc degree from London University in 1896, JC Bose, worked on the measurement of the wavelength of electric radiation by diffraction grating and millimetre-wave nearly a century back. JC Bose is being contemplated as the father of plant neurobiology worldwide.

Unlike Bose's epoch-making works in plant science, his experiments in Physics were fully compatible with the extant thoughts and were amalgamated seamlessly into the previous corpus of scientific wisdom.

Interminable Cutting-edge and Ground-breaking Research
After returning to Kolkata, Prof. Bose found immense interest

in studying and working more on electric waves. At the end of 1894, he presented a microwave demonstration in Town Hall, Kolkata. By 1896, he published his research work in one of the journals of the Royal Society London titled "On the Determination of the Indices of Refraction of Sulphur for the Electric Ray".

Significantly, this article was probably the first ever research publication by an Indian in a Western scientific journal. At the very onset of the twentieth century, Prof. Bose altered his domain of research interest almost entirely to plant physiology and plant neurobiology. A substantial portion of his

botanical research consisted of the leaf movements of two legume species, the sensitive plant and the telegraph plant. The sensitive one rapidly folds its leaflets when those get touched, and the folding response disseminates down the leaf, each pair of leaflets closing in turn.

According to Prof. Bose, these propagating movements were reminiscent of the action potentials which promulgate along the nerves of animals. On the other hand, the telegraph plant shows an uninhibited oscillatory leaf movement within which the two diminutive lateral leaflets of the trifoliate leaf alternately rise and fall with a periodicity of a few minutes. Prof. Bose got the idea of heart beating by observing these movements minutely. As far as the measuring apparatus and instruments with exquisite sensitivity are concerned, Bose was phenomenal with his own inventiveness and devising aptitude,