

HOMI JEHANGIR BHABHA

1909-1966

Bhabha, Homi Jehangir (b. Oct 30, 1909, Bombay, India. d. Jan 24, 1966) was an eminent scientist and an outstanding administrator with a practical and imaginative outlook for the utilisation of Science and Technology for the industrialisation and consequent economic development of India, after her attainment of political independence.

Bhabha took his Ph.D. at Cambridge (U.K.) in 1935. In 1937 he was awarded a Senior Studentship of 1851 Exhibition and continued work at Cambridge until the second world war began in 1939.

Bhabha will always be known for his work in theoretical high energy physics. He was the first person to calculate the cross-section for electron-positron scattering which is known as Bhabha scattering. He put forward the theory of cosmic ray showers by cascade production of gamma rays and positive and negative electron pairs. Analysing the experimental results on the penetrating component of cosmic radiation, Bhabha in 1937 came to the conclusion that either Quantum Electro Dynamics should break down at high energies or there must exist in cosmic radiation a particle that had a mass intermediate between that of the electron and proton. This work which was published in the proceedings of the Royal Society was contemporaneous with the experimental discovery of the mu-meson by Anderson. Bhabha was the first to point out that the lifetime of a meson in flight would be elongated due to time diltation effects predicted by Einstein's theory of Relativity and we know to-day that this measurement is the most direct demonstration of that phenomenon. Bhabha also formulated a 'Vector Meson' theory, a variant of the theory of nuclear forces. Bhabha also notably contributed to the theory of particles of high spin. He proved in this work that he could see further ahead than most of his contemporaries, as resonances in high energy collisions and particles of higher spin are today part of the observed external world.

Bhabha became Professor of Physics at the Indian Institute of Science, Bangalore, India in 1942. He founded the Tata Institute of Fundamental Research in 1945 at Bombay, an institute for carrying out research in mathematics and theoretical and experimental work in Physics.

Bhabha was responsible for the formation of the Indian Atomic Energy Commission of which he was the first Chairman. With great vision and sense of purpose, he devoted considerable thought and effort to the creation of the Atomic Energy Establishment at Trombay in Bombay- as a comprehensive Research and Development centre devoted to all aspects of atomic energy development. The Establishment has been since named after him as the Bhabha Atomic Research centre. His eminent stature as a scientist, administrator and savant enabled him to establish strong linkages with the national

government and with the developed world, for a programme of nuclear electricity generation in India.

Bhabha's participation as president of the First United Nations Conference on the Peaceful uses of Atomic energy held in Geneva in 1955 brought him to limelight in the world of science, as an articulate scientist who could speak for science in language which everybody understood. This Conference had been organised to explore the means for promoting the peaceful uses of atomic energy through international co-operation. Here he presented a brilliant essay on "Energy and Population" and also a paper on "The Role of Nuclear Power in India and its Immediate Possibilities". In the 2nd Geneva Conference in 1958, he presented a paper on "The Canada-India Reactor: An Exercise in International Collaboration". In the 3rd Geneva Conference in 1964 he presented a paper "World Energy Requirements and Economics of Nuclear Power with Special Reference to Underdeveloped Countries".

Bhabha made powerful contributions to the work of the International Atomic Energy Agency, Vienna, both as a member of the Scientific Advisory Committee and as an Indian spokesman in the General Assembly of the Agency. He was opposed to international control, of any sort, of information exchanges or on operations of reactors or reactor fuels. He was appointed as the President of the International Union of Pure and Applied Physics 1960-63.

Bhabha was the Chairman of the Scientific Advisory Committee to the Indian Cabinet from July 1964 until his death. He was responsible for the introduction of the Indian Space Programme through the setting up of Indian National Committee for Space Research. As Chairman of the Government Electronics Committee, he had prepared a detailed blue print for the development of the Electronics Industry in India.

Bhabha also possessed sensitive and trained artistic gifts of the highest order, especially in painting, pencil portraits and music. He had wide-ranging interest in sculpture, architecture and landscaping. He was restlessly creative, enhancing life because he loved all forms of it.

Bhabha was elected a Fellow of Royal Society of London in 1941. He was awarded the Adams prize in 1942 for a thesis on 'The theory of the elementary particles and their interaction'. In 1948 he was awarded the Hopkins prize of the Cambridge Philosophical Society. His services to the country were recognized in 1954 by award of the Padma Bhushan by the President of India. In 1957 he was elected to the honorary fellowship of the Royal Society of Edinburgh. In 1959 he was elected to the honorary fellowship of the American Academy of Arts and Sciences. In 1963 he was elected a foreign associate of the National Academy of Sciences of the United States.

Bhabha died in a tragic air crash on Mount Blanc on 24 January 1966 while he was at the peak of his powers.