

## My Reminiscence as a Physicist\*

At the high school, I was highly motivated by my language teacher to study English literature as I scored 90 percent marks in English paper in the 9th standard. However, I turned to science after reading a fascinating book by Lincoln Barnett "The Universe and Dr. Einstein", which kindled my interest in Relativity theory and four-dimensional world. As I was spiritually oriented, I started thinking that man's world is confined to three dimensions and there is another world of four dimensions revealed by theory of relativity. Albert Einstein became my hero in College days after Guru Nanak, the founder of Sikh religion. In fact, I found Guru Nanak's cosmological view point identical with relativistic models of the universe. I became fully convinced that study of physics can help in my spiritual growth and it is not a hindrance as thought by some half-baked scholars.

During my M.Sc. years at Aligarh Muslim University (1961-63), I was attracted to meta-physics and philosophy of science. Physics courses, taught as usual from prepared notes, became disgusting and I failed miserably in theoretical physics in the first year. However, in the final year of M.Sc., I followed the advice of my seniors to cram up the class notes dictated by our teachers and scored a first class. I was never a serious student in my class as most of the physics courses proved to be lack lustre and dull. However, my interest in Relativity theory and Physics of Elementary Particles remained intact from college days. Professor P. S. Gill, the eminent cosmic ray physicist, inspired me and I became interested to pursue my research career in particle physics. It was a joke in early sixties that if you are a good experimentalist, you can discover a new particle almost every week !

After a 5 year stint of teaching career in Punjabi University, Patiala, I was awarded a French Govt. Scholarship to carry on my doctoral research at Marie Curie University, Paris. Just after two years, I wrote my doctoral thesis rejecting the hypothesis of a new lepton (L meson) proposed by my own supervisor, Tsai-Chu, a scientist of Chinese origin. I had to prepare my defence on the day of examination and Jury recommended my thesis for the award of Dr. es Sc. (D.Sc.) degree of Paris University with the remark, "An Indian scientist has nipped the hypothesis of L-meson in bud". Many times, I thought it to be a fraudulent hypothesis which I rejected to win degree and appreciation of French Academy of Sciences in 1972.

On my return to India, my Chinese guide accepted my viewpoint, which he opposed tooth and nail during my thesis defence, but also proposed an alternative hypothesis "Cluster model" to explain particle production in high energy nuclear collisions. Let us learn a lesson from this episode, "There is no absolute and final 'Truth' in the phenomenal world of

Physics". The real test of a good theory is its experimental verification. Scientific research is a dynamic process. Let us hope the physicists find the ultimate hypothesis "TOE" (Theory of Everything) which seems to be a remote possibility based on my own experiences.

Let me conclude with an optimistic note for aspiring young physicists of India. Training in physics is highly useful in all walks of life. I changed my field of research from Particle Physics to Nuclear Geophysics and Material Science. It is such a wonderful experience in my life to explore new realms, viz. Earthquake Prediction Research and creation of exotic materials using Ion Beam Modification of Materials. A physicist is always a student of mother Nature with Universal humanism as his goal of life.

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