

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
BOMBAY

Silver Jubilee Celebration

(Saturday, 10th April, 1971)

Speech by Professor B. Peters

Your Excellency, friends & colleagues, Ladies & Gentlemen,

I have had the good fortune of being closely associated with the Tata Institute of Fundamental Research for over 20 years. Close personal ties have been established during these years, and these ties have led to co-operation in many publications and to the development of ideas and techniques for further research. You will understand therefore, that if I say I am happy to be present at the Institute's 25 year anniversary, it is an understatement.

Already well before this Institute was founded, there had been men in India who have made lasting contributions to world science, for example, Saha, Raman and Homi Bhabha. In experimental physics, however, in fact in all the experimental sciences, the situation was much less different favourable at that time. Experiments are at the base of almost all important advances in science; the development of experimental techniques, the invention, design and improvement of instruments, appreciable to increase in resolution, sensitivity or precision are the ingredients of original research; since they imply advanced techniques,

they are also, of course, directly connected with the enhancement of a country's technological capabilities and its economic development.

From the start the Institute has not been satisfied to purchase experimental or even to copy foreign designs. It is precisely in those fields where new or improved techniques were developed, that the most interesting scientific results were obtained. Let me give a few examples: Stratosphere balloons have been of great value to astronomy, cosmic ray physics and meteorology in the last two decades. The United Kingdom and India were the next countries after the United States to produce these at a time when the raw material and the know-how used in the U.S. were still withheld for strategic reasons. The solution of the special technical problems connected with very large balloons and particularly of balloons able to stand the low temperatures of the equatorial stratosphere gave the Institute for a time a clear lead in certain fields of research.

Methods for measuring very feeble radio-activity, developed at the Institute, were for some time well in advance of those existing elsewhere and permitted the detection of a number of cosmic ray produced isotopes in the atmosphere, which are of interest as tracers in meteorological research. Techniques for making visible radiation damage in tiny crystals of meteoritic or lunar origin beams are important elements in exploring the history of the solar system. One could go on by mentioning others.

The technique of precisely aligned nuclear emulsion blocks and the results they produced in the field of fundamental particles before accelerators were constructed to take over this new fundamental branch of science from cosmic ray research.

The large underground installation at Kolar for observing high energy neutrino interactions which was unique for some years.

Practical methods for extracting trace elements from enormous volumes of ocean water.

The large radio telescope in Ooty which possesses some unique features.

In each case, there was a genuine contribution of a technical nature which is responsible for the originality and the value of the results obtained.

Of course, I have emphasised here only one aspect of the Institute's work, that which is closest to my heart as an experimentalist, but I believe it is an essential one for the continuous growth of science in India and elsewhere.

Today, the Tata Institute of Fundamental Research is one of the important research establishments in the world, probably the most important

scientific institute in those vast and heavily populated parts of the globe which lie south of the Mediterranean and the Gulf of Mexico. In this sense, the Jubilee celebration today, which marks the year when this development was initiated, is a historical landmark in the true meaning of the word.

Let me close by expressing the hope that a leading role in inventing and developing techniques and instruments for scientific research may remain an important part of the Institute's activity in the years to come.
