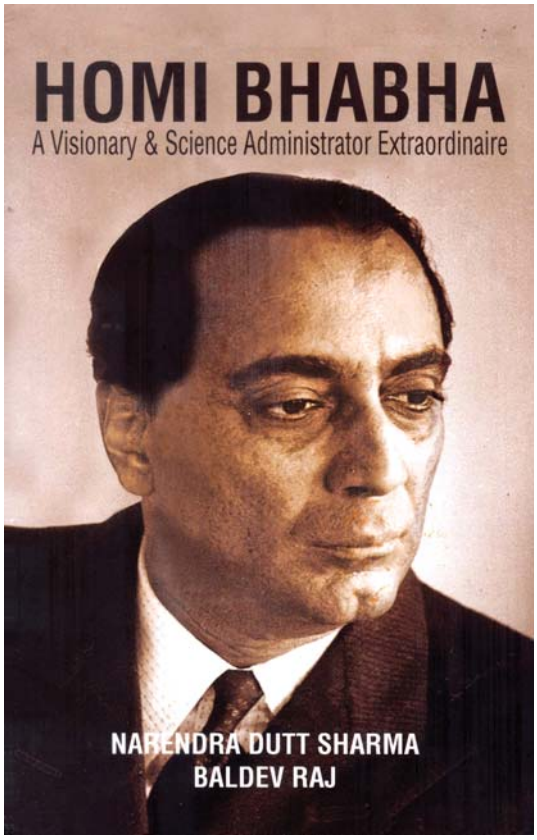
DOI: https://doi.org/10.36094/sc.v86.2020.Homi_Bhabha.Srivastava.258

Book Review



Homi Bhabha A Visionary & Science Administrator Extraordinaire by Narendra Dutta Sharma and Baldev Raj, published by Vigyan Prasar, Pages 135, Price Rs.250.00

Dr Homi Jehangir Bhabha (30 October 1909 – 24 January 1966), father of India's nuclear programme was a particle physicist par excellence and an institution builder. He was the trigger which led to the foundation of Tata Institute of Fundamental Research and then the Atomic Energy Research Establishment Trombay (AEET, now renamed as Bhabha Atomic Research Centre). He was universally respected for his contributions to particle physics; scattering of electrons and positrons (Bhabha Scattering) and cosmic rays (BhabhaHeitlerCascade Theory of Cosmic Rays) which were works of lasting importance.

Dr Bhabha's life is well documented, his letters to various persons; his father (where he talks of his love for physics), Dorabji Trust (where he proposes setting up a research institute), Pt. Nehru (on various occasions) etc., are well known and provide a deep insight into his love for research, his burning desire to pull India out of poverty, his resolve to give its people a pride of place in the comity of nations and its scientists a place and environment to work and excel, and most importantly his absolutely clear vision on how these could be achieved.

Several excellent books already exist which discuss many of these aspects in detail.

The book under review (HomiBhabha: A visionary& science administrator extraordinaire) by Narendra Dutt Sharma and Baldev Raj and published by VigyanPrasar, Department of Science and Technology), explores all the above and much more.

It accesses for the first time, Bhabha's letters to his close friend Hormasji Maneckji Seervai and his many letters and official notes to Pt. Nehru, Prime Minister of India during his efforts to set up TIFR and AEET, which bring out two aspects of his visionary personality: his burning nationalism and his clarity in matters of administration.

Look at his letter to his friend (quoted):

"…… *Has a man in this world done anything worth doing, that has been looked up to by posterity, ages after death, without coming into violent conflict with the world, without bitter opposition on many sides*….". He was just nineteen when he wrote this.

Later he writes, "…*A man, to have any self-respect, must have a certain background of culture, a certain pride in his race, which can only be cultivated by showing him the greatness of his own race at various times in history, the high culture that they possessed, or how they advanced the universal knowledge. India is not lacking in such past culture. It has one of the greatest in the world. What is required is to revive this ancient culture, to modernise it, to blend is with the greatest and best part of European culture, for if a nation is to live, and lead the world, it must possess a culture which is alive, which continues to change and evolve…. As a preliminary step, a new and unbiased history of India ought to be written which ought*

to be taught in schools. The past that ought to be more studied is not the Moghul period, but some of the more Ancient period, such as those of Chandragupta and later- I mean the real Hindu Empires. The causes of their fall ought to be stressed and the grosser blunders of princes in the day of East India Company, which eventually led to the conquest of India by England, ought to be plainly brought forward. I feel very strongly that for any unified nation to appear, the princes must be wiped out. If there are any intelligent ones, well they could join the assembly or the governing body of the Indian nation as representative. The stupid ones deserve to be deposed and forgotten…". Just note the cry of anguish and urgency in his letter!

In another note he writes, "*If I could, I would spend my life in an observatory watching the tranquil motion of stars, the harmony of numbers, everything happening as it has happened from times unknown; no star or mathematical symbol has a desire to go out of its place, to undergo any but its own destined function*", which establishes his great love for science.

The story of Bhabha's father's insistence to study engineering and join the family industry of steel manufacturing and his own insistence on studying physics is well-known. His father had relented only after Bhabha obtained a first-class in engineering. Thus, Bhabha studied physics. It is a pity that the situation in India has not changed even after several decades of the above, and scores of our young minds are forced to join engineering against their wishes, by their parents.

The story of his coming to India and inability to go back to take up a position at Cambridge or Princeton due to World War II, settling down at Indian Institute of Science, Bengluru and then prove to be the greatest gift of the Second World War to Indian science and nation is also very well known, and even though covered in the book will not be commented upon here.

Yet, even though his letter to Sir Dorabji Tata Trust, dated March 12, 1944, requesting support for what was to become TIFR is also too well-known, it is always instructive to read it again. Two points stand out clearly: (a) "*……Moreover, when nuclear energy has been successfully applied for power production in a couple of decades from now, India will not have to look abroad for its experts, but will find them really at hand…*", and (b) "*…. I have come to more and more to the view that provided proper appreciation and financial support are forthcoming, it is one's duty to stay in one's own country and build up schools comparable to those that other countries are fortunate in possessing*".

It is instructive to recall his comments, on the occasion of the inauguration of the magnificent building of TIFR in the presence of Pt. Nehru: " … *the history of science has shown that there is no genuine knowledge of the universe which is not potentially useful for man, not merely in the sense that action may one day be taken on it, but also in the fact that every new knowledge necessarily affects the way in which we hold all the rest of our stock*". These comments are even more important today when scientists are being repeatedly asked to do some "relevant and useful" science. Here stands a man, taller than the most, who firmly states that all knowledge is useful.

His building of TIFR by collecting some of the best minds of that time in particle physics, mathematics, biology, and computers is briefly discussed. Does one need to say anything, especially when one looks at the enormous progress made by TIFR over decades?

His note for setting up AEET is very clear and detailed, with everything spelt out clearly and crisply, leaving nothing to chance and uncertainty. His vision in setting up facilities for electronics, nuclear fuel fabrication, uranium exploration, heavy water production, chemistry, fuel reprocessing, engineering and physical sciences created a complete system for utilization of nuclear energy. And we should never ever forget the unflinching firm support he received from the Prime Minister, whom he famously addressed as "Dear Bhai". We were incredibly lucky that two such giants functioned in such harmony.

J. R. D. Tata is on record, where he says that in his life, he had met only three perfect men, Mahatma Gandhi, Pt. Jawaharlal Nehru and Dr Homi Jehangir Bhabha. Sir C. V. Raman had compared him to Leonardo da Vinci.

The book extensively quotes his notes to the Prime Minister, which freed AEET from the steel-like grip of Public Service Commission, Public Works Department, and the archaic purchase procedures, and which went on to pave the way for rapid development of the institutes. A closer look reveals that almost all his suggestions were approved by Pt. Nehru, within a day or two. He even went to the Prime Minister to get the best architect for the buildings of Trombay! He, personally, laid out the garden at Tombay, converting a barren hillock to a lush green forest.

The detailed office orders for the Merit Promotion Scheme which he succeeded in implementing, the procedure for evaluation of the people, for getting them trained etc. are clear and unambiguous and did not need to be revised even decades later.

He even issued orders about preparedness for holding functions and rules to be observed during the visit of VIPs.

I, like scores of scientists from remote places in India, have benefitted immensely from the scheme of Training School which he started, and which has provided all the Directors of BARC and Chairmen of Atomic Energy, for quite some time now.

The 3-stage programme to utilize the vast resources of thorium envisaged by him is on the track. Discovery of many more sources of uranium in the country have given us a lot of additional time to fine-tune the fast reactor technology, our reactors are creating world records for running continuously, all stages of a closed fuel cycle have been mastered, a lot many usages of nuclear radiation identified and implemented, all the electronics needed is available.

Personally, I have only one complaint to the authors and I hope that they will correct it in the next edition.The authors have not quoted the office order for building the Variable Energy Cyclotron in Kolkata, which initiated the accelerator programme in the country, which is making such good progress and which may provide an additional route for utilization of thorium, almost completely bypassing the plutonium route, which has challenges associated with liquid sodium coolant and proliferation concerns of plutonium, in addition to providing an intense neutron source for study of materials.

It is a very important book and should be compulsory reading for all the members of higher echelons of scientific institutions as well as leaders looking to lead important scientific programmes. I would like to congratulate the authors for a wonderful book. ❐

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