

Chapter 17

Epilogue

Saha's life span was in pre-independent India, except the last 8 years. In general, British India at the end of the nineteenth century was of poor people. Saha was also born in a poor family. Higher education or a research career was almost impossible for him. Saha had to struggle a lot at every stage. It created a deep impact on his personality.

He was bold enough to criticize even Mahatma Gandhi, without bothering about its effects. He was not an opportunist. After independence he was not included in the National Planning Committee, in spite of working hard on Planning in pre-independent India. It must have given rise to deep frustration. Many people, in the corridors of power, where power was centred in the ruling party, were confused about priorities, planning and its modus operandi in the National Reconstruction of independent India. Saha was of the firm opinion that in a country like India, the problems of food, clothing, poverty, education and technological progress can be tackled only with proper planning using science and technology. The forced march of the Soviet Union was his model. Today, looking back at history, one can argue about this; but it is a different issue.

'By his ceaseless writings and speeches, he has sought all these years to inculcate among his countrymen, a new scientific attitude and philosophy towards all problems of national development. It is this attitude and philosophy and, above all, his intense love for the country which had drawn him to Parliament and the people in this country. There may be disagreement about some of his views and programmes, but his objective and dispassionate approach to problems, on which a superb scientific and analytical mind, has been brought to bear, his sincerity of purpose, unflinching devotion to truth, courage of conviction and the great integrity of character, made him one of the rare thinkers of India. He was a man of action. He liked to see things happen. Nothing irritated him more than indecision, delay and excuses for inaction. ... His outward roughness and outspokenness, often mislead the superficial observer. The soft, tender and affectionate heart, which was hidden inside was only open to those who came in close contact with him. A true friend, philosopher and guide of his students, he accommodated many of his research pupils in his own home, treating them as members of his family, both at Allahabad and at Calcutta. His efforts, and not infrequently financial help, enabled many of his students to go abroad for higher studies and research. He took immense pride in the achievements of his students' [1].

He was a professor of the highest distinction, who could call forth the fiercest loyalties from his students. In the city of Calcutta, the Saha Institute of Nuclear Physics (SINP), the Indian Association for the Cultivation of Science (IACS) and the journal *Science and Culture* would ever remain monuments of his creative ability [2].

He was very disappointed by the performance of the government between 1947 and 1951, especially in matters of policy decisions on large-scale industrialization, mismanaged river valley development schemes and negligence in education and health.

He had two alternatives, either to observe in silence or raise his voice against mismanaged projects and improper planning. He was not the man to keep quiet. He entered Parliament for social causes. He did not want anything for himself. He was not a professional politician but circumstances forced him to enter Parliament.

Whenever questions asked by Saha in Parliament had no answers or exposed mismanagement or poor governance or policy lapses, the (ruling party) Congress members instead of answering made sarcastic remarks which were uncalled-for. For example, ‘...Prof. Meghnad Saha, who drifted from the fields of science and has found no foothold elsewhere.....’ It was impossible to prove that he drifted from the fields of science. He was an elected representative of the people at par with other members of Parliament. The personal attacks were unjustified. He entered Parliament with certain objectives. He thought it was his responsibility to compel the government to streamline projects of national importance. The range and depth of his knowledge reflected in his speeches in Parliament was amazing.

It seems from the historical details of nuclear science in India [3] that he was not given a free hand for research in nuclear science.

Apart from being a physics teacher and researcher, he was like a social teacher with a scientific attitude. He advocated and tried to inculcate scientific attitude through his various editorials and articles in *Science and Culture*, addresses and speeches at various occasions and debates in Parliament.

One may not agree with all his thoughts or opinions. Sometimes he appeared harsh, not trying to understand political and social compulsions. Yet his sole aim was to wipe out the tears of his poor countrymen, make rapid progress, optimize the country’s resources and mould young people for the betterment of society.

The forced march like Soviet Union was not possible in India, where Parliamentary democracy was functioning with its advantages and disadvantages. Indians’ ideas about their real and imaginary glorious past, feudalism, caste system, provincialism, regionalism, illiteracy and colonial past had a deep and long-ranging impact on society, which had resulted in intricate complexities.

I do not mean Saha was not aware of this. But from his writings, thoughts and criticism, it seems he was trying to simplify it or give less importance to it or may be overambitious or extremely optimistic rather than realistic.

While reading some of the articles and speeches, it feels that as if he sat in front of you and talked to you, making you understand or trying to convince you. His words came from the bottom of his heart. His writings were full of utmost sincerity, scientific approach, wide perspective, fervour for his countrymen’s progress and betterment of the poor.

Scientists of Saha's stature, who have an intense desire for using science to solve the problems of society, and comprehensive thinking are very rare, always ready to put all efforts wholeheartedly in the form of time, labour, etc. in that direction. It is unfortunate that India could not use Saha's intelligence to the maximum extent.

Saha worked on various government committees. He was a member of BSIR and then CSIR. Bhatnagar was the Director General of CSIR, and the establishment of a string of national laboratories was his monumental work. Though he was an eminent scientist and Fellow of the Royal Society (FRS) of London, he was not allowed to contact the member-in-charge (corresponding to Minister) directly, but only through the secretary of the department who was either a civil servant or finance official man. It was Saha's pungent criticism of this system in *Science and Culture*, which compelled the Government to grant Bhatnagar the rank equivalent to that of Secretary and the right of direct approach to the Minister.

Saha had realized that bureaucracy was one of the causes of inefficiency of the Government, where scientific and technical knowledge was concerned.

In the establishment of Atomic Energy Commission, Bhabha reported directly to the Prime Minister and that was one of the reasons why Bhabha was successful in building an empire of DAE. One might (or could) suspect bureaucracy would have punctured many DAE projects.

Saha's research in physics at the beginning of his career gave him fame. His name was proposed for the Nobel Prize also. But due to various complicated issues, it was rejected. The Nobel Prize should not be the sole criterion of excellence. The manner in which a particular contribution changed, modified or affected a fundamental or application part of physics and to what extent should be the criterion of excellence. Let the historians of physics decide it!

Subjects like technical and professional education, university structure, research at universities and other institutions, industrialization, river management, calendar reform, etc. were dearer to him. When the Damodar Valley Corporation Act was adopted by the Government of India and they appointed a Tennessee Valley Authority expert Mr. Voorduin to draw up a preliminary plan for Damodar Valley, Saha congratulated the government. The Voorduin report closely agreed with the specific recommendations given in Saha's article (with K. Ray) in *Science and Culture* on *The Planning of the Damodar Valley*. The report did not acknowledge it or conveniently forgot it. But history will never forget it.

'Indian science has been the victim of the triumph of Nehru's decision to place nearly all of India's scientific eggs in the Government basket. Saha's idea would probably have served India's interests better' [4].

Various reports on today's education in India¹ indicate that Saha's concern, expressed in his Parliamentary speeches and at other places, about education in general and higher and technical education in specific was not unnecessary.

¹More than 65 years after independence and various plans, their reviews and re-plans, one of the reports says that there are 5.23 lakh vacancies of teachers at primary school level, 5.1 lakh additional primary teachers are needed to meet the Right to Education Act and 7.74 lakh of the existing primary teachers are not qualified enough. There are 35% of vacancies at 24 older central universities,

On Saha's 60th birthday, E. O. Lawrence said: 'Indeed, I shall never forget the intellectual thrill, I derived from learning about *Saha's ionization equation* in my early days as a graduate student...' [1].

I dare to borrow Lawrence's words.

References

1. S. N. Sen (ed.) *Professor Meghnad Saha: His life, work and philosophy* (Meghnad Saha sixtieth birthday committee, Calcutta 1954)
2. J. C. Ghosh, in *Professor Meghnad Saha: His life, work and philosophy* ed. by S. N. Sen (Meghnad Saha sixtieth birthday committee, Calcutta 1954), p. 142
3. J. Phalkey, *Atomic State: Big Science in Twentieth-Century India* (Permanent Black, Ranikhet, 2013)
4. S. Chatterjee, E. Chatterjee, *Meghnad Saha* (National Book Trust, New Delhi, 1984) p. 78
5. *Indian Express* (Daily, Mumbai Edition), April 19, 2012
6. *Times of India* (Daily, Mumbai Edition), January 5, 2014
7. T. Feder, *Physics Today* **64** (12), 26 (2011)

50% or more vacancies in 19 out of 77 state universities and at least 40% of vacancies in 14 others. In technical institutes there is 1 lakh faculty deficit [5]. Only 10% of students have access to higher education (beyond higher secondary schooling) in India. In China it is 22% and in USA it is 28% [6]. Another report says that to go from having islands of excellence to being a major world player in science, India must solve such problems as dearth of teachers and a divide between research and teaching [7].