



BOOK REVIEW

Snehamoy Datta - His Scientific Work in International Context

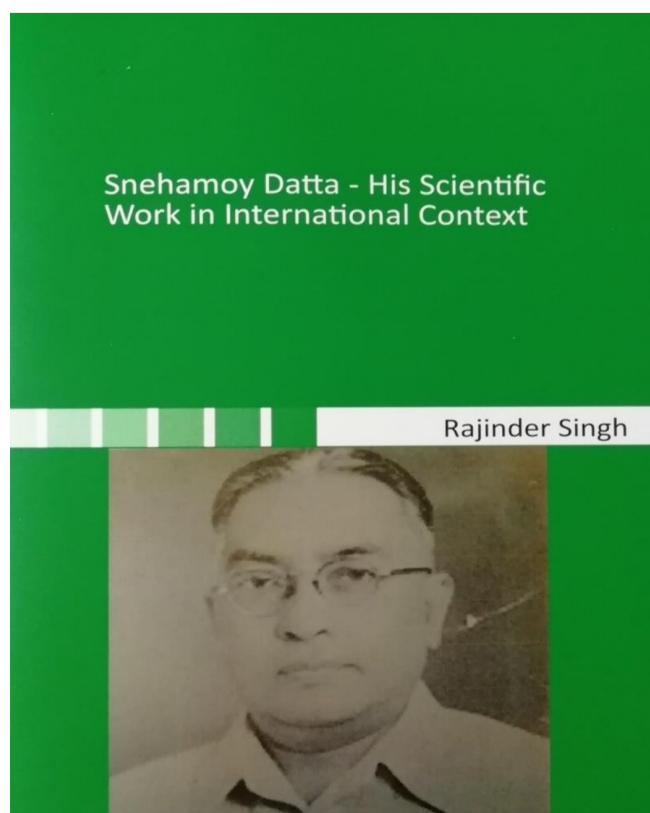
Rajinder Singh

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Rajinder Singh of University of Oldenburg, Germany, has created a sort of record in tracing the history of science in India. His focus remains on the Calcutta School, in particular, the Scientists of Golden era of Indian Science. The present volume is devoted to Snehamoy Datta (SD), an ignored scientist, whose worth is revealed by the author. Prof. AK Singhvi has paid high tributes to the author in his Foreword: "I also seized this opportunity to acknowledge and applaud Dr. Singh's efforts in bringing alive, the stories of unsung heroes of Indian science. I have truly admired his effort in this direction".

The author writes about SD in his Introduction: "J.C. Bose, the discoverer of the short-wave is considered as one of the initiators of the modern physics in India. His student, Snehamoy Datta (1894-1955), belongs to the 'Golden era of Indian Physics', that is, the first three decades of the 20th century". Then the author reveals the purpose of writing this book: "To the best of my knowledge, S. Datta's biography does not exist. The present book is written to fill the gap".

Chapter 1 narrates the salient features of life of SD: "Snehamoy Datta was born on Oct. 20, 1894, in Sabhar, a small village in Dacca (Dhaka), now in Bangladesh. In 1913, he graduated from the University of Calcutta. For his extraordinary achievement, he won the Woodrow scholarship. Datta joined the Presidency College in Calcutta, the only place where post-graduate studies were pursued in those days. In 1915, Snehamoy Datta was declared second in order of merit in M.Sc. Physics".

He won the Premchand Roychand Studentship to visit U.K. for higher studies and began his research career under the astrophysicist Alfred Fowler FRS. SD received D.Sc. from the University of London for his work: "1. On the spectra of the alkaline earth fluorides and their relation to each other. 2. The spectrum of beryllium fluoride. 3. The vacuum arc spectra of sodium and potassium. 4. The absorption spectrum of potassium vapour". On return to India in 1922, SD joined Presidency College Calcutta to teach Physics.

Chapter 2 describes the research activity of SD in UK and Germany. He first investigated the Selenium behaviour with temperature: "Transformation takes place at all temperatures. The various modifications may be regarded as maintaining a sort of dynamic equilibrium amongst themselves, the quantity of each variety depending on the particular temperatures". According to his fellowship condition, SD changed his field of research to Spectroscopy and started working under Alfred Fowler. He made new discoveries in the solar spectra. In his own words: "The presence of potassium in the Sun has been established, and some additional sodium lines have been identified with solar lines".

His contributions to the spectra of the alkaline earth fluorides (magnesium, calcium, strontium and barium) need to be highlighted as he found several new bands. His experiments established:

- (i) Nine series of bands in the spectrum of magnesium fluoride;
- (ii) Four new series for calcium fluoride in the ultra-violet region;
- (iii) Four new series for strontium fluoride in the ultra-violet and a very weak one in the red region.

His association with J. Franck in Germany resulted in discovery of the broadening of nitrogen positive bands in presence of bromine vapours.

Chapter 3 gives detailed description of SD's efforts to create absorption spectroscopy laboratory in Presidency College, Calcutta. He investigated band spectra of Nitrogen, and studied the absorption spectra of potassium, sodium and rubidium at moderate pressure. His other experimental investigations include: "Vacuum arc spectra of rubidium and lithium; Identification of the sun-spots line at λ 6708 Å; A new method to determine the ionization voltage of elements, and Characteristics of the long and short spectral lines in copper, silver, zinc and iron spectra". He was father of absorption spectroscopy in India and his research was published in international journals of repute.

In **Chapter 4**, author deals with the new assignment of SD as the Principal of Rajshahi Government College (1940-1945). He started applications of spectroscopy to areas of veterinary science and in printing industry. SD was engaged in modelling School Education in Bengal. His aim was to find out a model to predict the number of types of schools, which would be needed for a planned development of education with respect to employment. I will recommend this type of study for skill development through education in Schools of India. He left Rajshahi in 1945 after political riots and returned to Calcutta to work in Bengal secretariat. He retained this position until his retirement at the age of 55. After retirement, he served as Registrar of Calcutta University.

Chapter 5 proves that SD was a multi-talented writer. He was supporter of teaching Science in Bengali language. For this purpose, he wrote a popular science book in 1955 for school children under the title "Saral Vigyan". It deals with physics, chemistry and biology subjects. He also wrote Text books of Physics for B.Sc. students. His contribution in the field of Education is praise worthy: "SD and S.C. Sen wrote a report on the progress of education in West Bengal. The authors did a general survey on the prevailing conditions, and made suggestion about the structure of education on the 'Primary-', 'Middle-', 'High-' School and University level. The report also dealt with 'Adult Education' and 'Vocational and Technical Education'"

The author has tried to evaluate impact of Datta's work in Chapter 6. An analysis of his research contributions has been made to highlight the impact of his work at national and international levels. In Chapter 7, author tries to justify the contributions of S. Datta calling him founder of absorption spectroscopy in India. In the estimation of Rajinder Singh: "SD was a multi-talented person, who tried to popularize science in Bengali. However, he did not get credit for it. He did not have successful students to keep his legacy alive. He did not establish 'a school' or an institute; we have seen his involvement in education committees, and definitely he influenced the future school education system in India".

The last 22 pages of this volume are dedicated to miscellaneous topics relevant to the theme under discussion. List of Publications collected from INSA and Proceedings of ISCA (Indian Science Congress Association) are listed separately. It is followed by an exhaustive Bibliography which is a special feature of author's books. I may point out minor typos in the

text, for example, quality in place of quantity (Section 3, page 44), salvia in place of saliva (Section 1, page 79).

Overall, this volume is a welcome addition to history of science in India. It needs to be mentioned that Rajinder Singh has already published monographs on unsung heroes of Indian Science, namely, Upendra Nath Brahmachari, Bidhu B. Ray, Sisir K. Mitra, Sukumar C. Sirkar, Debendra M Bose, and Kedareshwar Banerjee. The present volume is a continuation of the same tradition set up by the author.