

RAJINDER SINGH

**EINSTEIN REDISCOVERED: INTERACTIONS
WITH INDIAN ACADEMICS**



FOREWORD BY PROF. S.C. Roy

Wissenschaftsgeschichte

Rajinder Singh

**Einstein Rediscovered:
Interactions with Indian Academics**

Shaker Verlag
Düren 2019

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

Front cover picture of *Albert Einstein*

Credit: Journal Science and Culture, Kolkata

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J. Ghosh (Indian National Science Academy, Delhi)

C.V. Raman (Indian Association for the Cultivation of Sciences, Calcutta)

D.M. Bose (University of Calcutta)

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Printed in Germany.

ISBN 978-3-8440-6618-0

ISSN 2198-8552

Shaker Verlag GmbH • Am Langen Graben 15a • 52353 Düren

Phone: 0049/2421/99011-0 • Telefax: 0049/2421/99011-9

Internet: www.shaker.de • e-mail: info@shaker.de

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Preface

S.N. Bose, a young Bengali physicist from the University of Dhaka (Bangladesh, in those days a part of undivided India) sent an article to Albert Einstein, with the request to comment and if possible to get it published in a German journal. In the paper Bose had applied Einstein's light quantum hypothesis to derive Max Planck's radiation law. Einstein not only translated the article, but also realized the far reaching consequence of Bose's idea, namely, its application to the ideal gases. Consequently, Bose-Einstein statistics was born. The year 1905 is often called the *annus mirabilis* in the history of physics, as Albert Einstein wrote his landmark papers which changed the concept of physics. To honour him in 2005, many conferences were organised worldwide. On the Indian subcontinent the opportunity was taken to highlight S.N. Bose's achievements. The Bangladesh Academy of Science, Goethe Institute, and the Ministry of Science and Information & Communication Technology, Bangladesh organised a seminar on "Albert Einstein and S.N. Bose". I was invited to deliver a lecture. This was the first time that I worked on the reception of Einstein's light quanta by the Bengal based physicists.

There are a number of books on Albert Einstein. To the best of my knowledge, there is no literature which extensively deals with his relation with Indian men of science, as well as the reception of his scientific ideas like light quanta and the theory of relativity. The present book is written to fill the gap. In part it is based on my articles which were either published or are under consideration.

I have been working in the field of history of science for about two decades. In the past I wrote a number of books on "Indian Nobel Prize nominators

and nominees” in various fields. I see it as a challenge to write about the ‘ignored’ scientists, who in their own ways influenced the development of science and technology in India. In the past, I have written about Bidhu Bhushan Ray, Sisir Kumar Mitra, Debendra M. Bose and Sukumar Chandra Sircar. In India not much has been written on the history of female scientists. Recently, a book by R. Singh and S.C. Roy on “A Jewel Unearthed: Bibha Chowdhuri - The Story of an Indian Woman Scientist” was well received by the Indian media.

Those who worked/work on Indian history of science are well aware that most of the archives are not well organised. In particular, to find out information on the physicists in the second half of the twentieth century is very difficult. This is one of the reasons that Einstein’s letters to Indian men of science and culture are not referred to in the present book. A serious historian sees the lacuna. I hope to get feedback from the friends, relatives, and students of those who are mentioned in this book. Their feedback will help to improve the next version of the present book.

Remarks

To make the text readable some information is given in square brackets.

“Biographical Memoirs of the Fellows of the Indian National Science Academy” are special publications. They do not have year of publication. In this book, the year given in reference is the year, in which a Fellow died. For example: Chaki M.C., Jyotirmay Ghosh (1896-1965), Biog. Mem. Fell. INSA 16, 13-16, 1965.

Acknowledgements

First and foremost I thank Prof. S.C. Roy, Editor-in-Chief of “Science and Culture” and member of the “National Commission of History of Science, INSA”, for commenting on and correcting the manuscript. Without his constant help this book would never have been completed.

I heartily acknowledge the following organisations for supplying the documents used in this book: Niels Bohr Archive - Copenhagen, Asiatic Society of Bengal - Kolkata, Bose National Centre for Basic Sciences - Kolkata, Saha Institute of Nuclear Physics - Kolkata, Bose Institute - Kolkata, Raman Research Institute - Bangalore, J.N. Memorial Museum and Library - Delhi, Albert Einstein Archive - Hebrew University of Jerusalem, Department of Rare Books and Special Collections – Princeton University Library, and Bodleian Library Oxford.

I thank Prof. Dr. Michael Komorek, Head – Physics Didactic and History of Physics, University of Oldenburg, Germany, for providing research facilities. Thanks are due to my wife Birgit Krah, children Amer Simone and Hira Michael, and my brothers and sisters, and their children for moral support. I appreciate the help of my colleagues Petra Raue and Elias Neukirchen, Head of “Grund- und Oberschule”, Syke for assisting me by one way or another.

I am thankful to Ms. Danielle Schmidt, University of Oldenburg, for correcting and improving the manuscript.

Last but not the least I thank Mrs. Leany Maassen and Shaker Publisher Aachen for publishing the present book.

Foreword

Albert Einstein is known to the world for his scientific ingenuity, an icon of great intellect of all ages. To Indians, 'Einstein' is a household name not only for his scientific ingenuity but more importantly for his name being tagged with a great Indian physicist, Satyendranath Bose (S.N. Bose). It is well known that young Bose had contacted Einstein with a request to translate his article into German and publish it in a scientific journal. Einstein translated and sent it to a journal with a note that the derivation given in the article is a bold step forward. The paper was published, and finally established a new kind of statistics known as Bose-Einstein statistics. Einstein's connection with some other famous Indians like Rabindranath Tagore, Mahatma Gandhi, Jawaharlal Nehru is also known. But his connection with other Indian men of science beyond S.N. Bose is almost unknown. Even the book *The Einstein Scrapbook* published by the Johns Hopkins University Press which contains correspondences of Einstein with various persons from different walks of life, has the mention of only two Indians in it - Rabindranath Tagore and Mahatma Gandhi. Even the name of Bose is missing here.

The title of the book "Einstein Rediscovered: Interactions with Indian Academics", may raise many eyebrows doubting the number of Indians who may have connections with Einstein. But I am sure that the reaction will soon change to a pleasant surprise when they see the number of Indians on the list.

Rajinder, being an exploratory historian of science, explored hitherto unknown connections of Einstein with many other Indian scientists, non-scientists, would-be-scientists, students etc. Rajinder has done a stellar job in exploring the connections of so many Indians with Einstein. This is a challenging task particularly in a situation where Indians are known to be

casual in maintaining documents and records. I wonder how many of us know that Mr. Aurobindo Mohan Bose (AMB), son of Mr. Ananda Mohan Bose, who was brother-in-law of the famous scientist Jagadish Chandra Bose, had an intimate connection with Einstein. The relationship he had with Einstein was so close that AMB shared all his emotions, feelings and personal problems with him and even received financial support from Einstein at his time of crisis in Europe. Readers will be surprised to know that AMB translated Rabindranath Tagore's poem *Balaka* (flight of swans) into English which was published by John Murry of London and Cambridge. Letters written by AMB to Einstein on different occasions testify the closeness between the two.

The book explores the relationship of three great Indian scientists D.M. Bose, S.N. Bose and Meghnad Saha with Einstein. Incidentally all three were contemporaries, D.M. Bose being a little senior to others. It is found that the communications with S.N. Bose were strictly on a formal setting and never went beyond professional discussions. To S.N. Bose, Einstein was his 'guru'. On the other hand, the relationship between Saha and D.M. Bose was more close. D.M. Bose had his higher education in England and Germany and came in contact with many prominent scientists including Einstein. Since D.M. Bose came to know Einstein while he was in Germany, that might be the reason for the relationship between D.M. Bose and Einstein being different from that with S.N. Bose. Interestingly, Einstein sometimes confused between the two Boses: D.M Bose and S.N. Bose.

The relationship between Meghnad Saha and Einstein was quite informal and friendly as Saha discussed many other issues beyond physics. This could probably be due to similar mindsets of the two. Both Einstein and Saha were of the opinion that scientists must also work towards increasing the society's awareness of the implications of scientific discoveries.

This book also acts a remembrance of the glorious past of Calcutta (now Kolkata) scientists and their scientific activities in the early to mid-twentieth century. Rajinder has cited several examples to conclude that Indian scientists at that time were well aware of the developments that were taking place in science world-wide and therefore were not isolated from the helm of modern scientific research. Rajinder has very aptly presented the reactions, criticisms and acceptance of Einstein's concept of the quantum theory of light and the theory of relativity. Many Indian scientists like Jyotirmoy Ghosh, N.R. Sen, Shah M Sulaiman and others commented on this subject. Sulaiman needs a special mention here. He obtained Tripos in mathematics and law from Cambridge and doctorate in law from Dublin. In spite of being the Chief Justice of Allahabad High Court and Vice-Chancellor of Aligarh Muslim University, he was a strong critic of Einstein's theory of relativity and published five papers on it. His 'semi-classical' theory questioning the correctness of Einstein's theory of relativity received world-wide attention; the reputed international journal 'Science' commented "A new mathematical theory of relativity which may overthrow the world famous theories of Professor Albert Einstein." Sulaiman is an example of scientific integrity and courage for not accepting anything blindly even if it comes from a famous scientist.

Although C.V. Raman's work had been influenced by Einstein's idea, he had no correspondence with Einstein. It is known that Homi Jahangir Bhabha, one of the famous scientists of contemporary period, had personally met Einstein at Princeton, USA. But it has not been mentioned in the book which I think Rajinder omitted on the ground that he has not found any exchange of letters between Bhabha and Einstein.

As the title suggests, the book rediscovers Einstein beyond the Bose-Einstein paradigm and shows his other qualities beyond his scientific ingenuity which

would have remained unknown if Rajinder had not dug out all the communications between Einstein and Indians. The book presents Einstein as friendly, helpful and approachable at any time for any trivial or non-trivial issues. When Amlan Dutta, a noted economist of India and a prolific writer on socio economic, political and philosophical subjects, sent a copy of his book 'For Democracy' to Einstein, he replied appreciating the book and went a step further by offering help to publicize the book in India and abroad.

Rajinder is known for his passion for carrying out research on the history of Indian science, an area very difficult because of the lack of proper documents and records. Rajinder in his inimitable way tore apart many of the myths and stories surrounding Einstein and S.N. Bose with evidences and his arguments. Rajinder has already authored more than twenty valuable books related to history of Indian science and scientists. This book will be an important addition to the list. I congratulate Rajinder for presenting another notable book in the area of Indian history of science with valuable information that even Indians were not aware of.

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