

## Writing the history of modern science and technology in India

Rajinder Singh

Writing the history of modern science (of the 20th century) is a tricky issue. In general most of the archives supply documents, which are older than 50 years. In the previous issues of *Current Science*, views have been put forth about collecting documents while writing on the Indian Institute of Science<sup>1,2</sup>. I have been working on India's history of science for more than a decade and have experience with archives in India and abroad. I would like to share my views about the collection of sources and how to improve the situation in India. My opinions are entirely subjective. However, with this note I intend to start a discussion, which could be useful for scientists as well as historians of science.

To start with it should be mentioned that India's history of science and technology has special features such as:

1. India belongs to one of the oldest civilized cultures with a long tradition in science and technology. Her history of science can be studied in a different context compared to that of other modern civilizations.

2. For a long time, India was under the influence of foreign cultures. The history of Indian science and technology is the history of transfer of technical knowledge and education.

3. Indian history is (was) the history of the so-called Third World countries. Within a short span of time India has become a nuclear power and leading figure in information technology. Why and how did Indian men of science achieve this? The study of such issues could be a good lesson for other Asian and African countries.

4. If we limit our focus on physics and chemistry only, in the 20th century the role of Indian men of science was not minor. In terms of one of the highest honours, namely the Nobel Prize, in the first half of the 20th century the achievements of Indian scientists were far better than those from that Latin America, Africa and most of the Asian countries<sup>3</sup>.

There is no doubt that we need the subject as it deals with the heritage, glory and defeats of the past. The new

generations can learn from the past successes and defeats. A popular proverb is: 'Through past we see future'. Not only politics, but also science and technology are a part of a culture. In the beginning of the 20th century, different authors wrote on the topic. One example to be quoted is that of the Indian chemist P. C. Ray's 'History of Hindu chemistry' published in 1902 (reprinted by the Indian Chemical Society, Calcutta, 1956) in *History of Chemistry in Ancient and Medieval India*. The less known fact is that Ray was the first Indian to be elected as member of the famous journal *Isis* (USA), which deals with the history of science (P. C. Ray to chemist Svante Arrhenius, Swedish Nobel Laureate, letter dated 13 March 1991. Courtesy Swedish Academy of Sciences, Stockholm).

Indian men of science and technology made history, but less has been written on their achievements as the official recognition to the subject came quite late. The first thought on the need of the history of science in India was made during a symposium on the 'History of Sciences in South-East Asia' in 1950. It was organized by UNESCO and the National Institute of Sciences (INSA) of India. After 15 years, that is, in 1965 the National Commission for the Compilation of History of Science was constituted<sup>4</sup>. In the following years many projects have been supported by the Academy. In order to establish the history of science and technology, much more needs to be done. First, trained historians of science are needed. There is no doubt that any historian can write about the history of science, but if someone wants to write on the history of biology, chemistry, mathematics, physics and technology, at least he needs to understand the fundamentals of the subject. Students, after finishing their degrees in natural sciences and engineering, should be given a chance to do their PhD in the relative fields. In the long run, some of the universities should have their own departments. At the initial stage, such degree courses can be incorporated within other departments such as physics and mathe-

matics, as is the case in some of the German universities. Students can work at universities (offering history of science), in science centres and technical museums, in libraries and in particular, archives collecting documents on the history of natural sciences.

A historian cannot work without documents and archives. In this direction, the following could be done.

- To establish a 'Central Digital Archive', which should have the names of the institutions and private persons possessing documents such as reports, correspondences, photographs, scientific instruments, etc.

- A great deal of work has been done on individual scientists like B. Sahni, H. J. Bhabha, M. N. Saha, J. C. Bose, S. N. Bose and C. V. Raman. Archives and persons abroad should be contacted to get more material in order to explore their interaction with scientists abroad. While searching for material on Raman, I found more than 300 unpublished letters and about 40 photographs in European archives. Possibilities should be explored to transfer such material to Indian archives.

- Special documentation (through interviews) should be made on scientists who worked in reputed research institutions and universities in India.

- Working scientists should be made aware of and encouraged to preserve their documents and scientific instruments.

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1. Balaram, P., *Curr. Sci.*, 2008, **94**, 5–6.
  2. Subbarayappa, B. V., *Curr. Sci.*, 2008, **95**, 150.
  3. Singh, R., *Notes Rec. R. Soc. London*, 2007, **61**, 333–345.
  4. Bose, D. M., Sen, S. N. and Subbarayappa, B. V. (eds), *A Concise History of Science in India*, Indian National Science Academy, New Delhi, 1971, p. vi.
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Rajinder Singh is in the University of Oldenburg, Faculty V, Institute of Physics-EHF, Physics Education, History and Philosophy of Science, PO Box 2503, 26111 Oldenburg, Germany. e-mail: Rajinder.singh@uni-oldenburg.de