

## Historicising People's Scientists of Bengal

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At the very outset the reason for choosing the subject of this paper to publish in the *Journal of People's History* should be elaborated. The history community of our country, and even of abroad are aware of the project that has been taken by the *Aligarh Historians Society* to publish a number of volumes in its project on *People's History of India*. In the preface of the first volume of this series Irfan Habib has written 'In this monograph as well as in the parts of the People's History that would follow, the style is sought to be kept simple, without making it 'popular', rhetorical or inexact. Use of technical terms is kept to a minimum, and an effort is made to provide a workable explanation of each term at first use. Abbreviations too are avoided, if these would not mean anything to a lay reader.'<sup>1</sup> Likewise, this paper deals with some personalities who believed in the same manner. They tried to communicate science though they were not formally trained. They might be referred to as scientists by nature. These scientists did not have the formal training of science or the so-called academic degrees. They did not possess any well-equipped laboratory. Yet, despite those limitations, they did excel in their works and achieved the goal of communicating science through various forms.

The story may be begun with Sitanath Ghosh (1842 – 1884), who was a technologist. He made a special machine that could work without the help of muscle power. It was made for cotton weaving. To consider his contemporary society this innovation was a great one. Rabindranath was a student of Sitanath Ghosh. He wrote the experience of learning science from Sitanath – "Usually Sitanath Dutta had come to teach physical science with the help of apparatus. This education was very much interesting to me. I still remember that he showed me an experiment with wood-dust in water in a glass container-where boiling water in the lower portion of the container goes up and the heavy water goes down, I was overwhelmed on that day. Another day I was surprised when I realised from the experiment that he showed that after boiling the milk the water portion evaporates and that is why the remaining milk portion becomes thick. On that day I realised that water is a separate thing in milk. He usually comes on Sunday; when he does not that day, I never felt it was a Sunday."<sup>2</sup> Sitanath successfully pleased the child who otherwise was very reluctant to school education because of its monotonous nature. The key to Sitanath's success as a science communicator lay in the joy of learning through experimentation. He contributed successfully to the non-formal education. Rabindranath was moved by it and even followed this kind of experimental science education in his *Visva Bharati*.

One of the pioneering science teachers of *Visva Bharati* was Jagadananda Ray (1869-1933), who was an enthusiastic science writer. He sincerely pursued sky watching through the help of telescope. In this connection he was acquainted with Radhagobindo Chandra (1878 –1975). Radhagobindo Chandra was an amateur astronomer. He was the pioneering figure of sky watching/ observation. In 1910 when *Halley's Comet* was seen Jagadananda wrote an article in the *Prabasi*<sup>3</sup>. Later Radhagobindo wrote a book on the comet in the decade of 1950s. Radhagobindo was a fine observer of the sky. He got recognition from abroad<sup>4</sup>. He got many honorary memberships of famous international organisations of his area, namely the *American Association of Variable Stars Observers*, the *British Astronomical Association* et al. His contribution was praised by the astronomers and especially by the education department of France.

In formal education he was a failure. He even could not clear the Matriculation examination. But he had a scientific aptitude in its true sense. He always practiced experimentation and observation. He wrote on popular science. His articles were published in *Aaloke*, *Bidhilipi*, *Hindu Patrika*, *Prabasi*, *Desh*, and *Jnan O Bijnan*. He wrote five books – *Dhumketu*, *Sourajagat*, *Nakshatra Jagat*, *Sabita O Dharani* and *Tara Chinibar Sahaj Upay*. Only the first book (*Dhumketu*) was published during his lifetime. His contribution can be judged by the fact that later in 1960s when the science club movement had started to

develop, one of its thrust areas was sky observation. It could be said that he anticipated science club movement through his individual work.<sup>5</sup>

Another individual initiative should be considered in the development of science movement in West Bengal. It was the initiative of Gopalchandra Bhattacharya (1895-1981), who was an outstanding personality in the science movement of West Bengal. He was a naturalist and practicing scientist. He had a deep interest in science though he was not highly educated in formal education. But his sincere experimentation with nature earns him the honorary D.Sc degree from the University of Calcutta. He had versatile interests in different aspects of science starting from plants to animal behaviour. He wrote extensively on these subjects. A salient feature of his writing was that the content of his articles were mainly based on his own experimentation. Along with that he wrote the news of new innovations in science. He wrote his articles mainly in the *Prabasi* and the *Jnan O Bijnan*. He was one of the members of the *Jnan O Bijnan* Sub-committee of the *Bangiya Bijnan Parishad*. In January 1948 when the first issue of the *Jnan O Bijnan* was published Prafullachandra Mitra was the editor. In March 1948 when the *Jnan O Bijnan* Sub-committee was formed Gopalchandra was the convener of that Sub-committee. In 1949 he became the joint editor with Prafullachandra Mitra. Prafullachandra resigned from this assignment in January 1950 and from that date onwards Gopalchandra became the sole editor.<sup>6</sup>

Till 1977, he did his editorial work with great sincerity, seriousness and devotion. He wrote himself, encouraged others to write and tried to improve the received articles for publication. In 1977 the Executive Council in its meeting held on 12<sup>th</sup> March 1977 decided to remove Gopalchandra from the post of editor and informed him accordingly. The pretext of this decision was a notification of *Council of Scientific and Industrial Research* (C.S.I.R), which mentioned that the C.S.I.R would provide fund only to those vernacular science-periodicals whose editor would at least be a graduate in either science or technology. For getting fund the Parishad did this, which evoked a sharp criticism. Jayanta Basu remarked<sup>7</sup> that the Parishad could inform the CSIR that Gopalchandra was an outstanding scientist, famous science-writer and editor of this magazine nearly from its beginning, so this criterion should not be appropriate for him. But the *Parishad* did nothing in this line. On the contrary, the CSIR on its own send a letter to the *Parishad*<sup>8</sup> asking a clarification for this type of unfortunate decision. It clearly stated that there was no need of removing Gopalchandra from the editorship. Ultimately, the *Parishad*'s President Asima Chattopadhyay and one of the vice-presidents Sushil Kumar Mukhopadhyay met with Gopalchandra and expressed grief for this incident. So from 1977 till his death Gopalchandra was the chief adviser of the *Jnan O Bijnan*.<sup>9</sup>

Gopalchandra wrote a number of books that include *Banglar Keetpatanga* (Insects of Bengal), *Banglar Gaachhpala* (Trees of Bengal) etc. The first book was awarded with the *Rabindra Puraskar* in 1975. Gopalchandra tried to fill up the gap of formal education. He always encouraged the students to make experiments. He regularly wrote a series of articles under the title of *Kore Dekho* (make experiments) in the *Jnan O Bijnan*. He also tried to develop the scientific terminologies in Bangla. Thus it could be said that Gopalchandra was a great personality in the science movement of West Bengal as his activities encompassed every aspect of this movement.<sup>10</sup>

Like Gopalchandra, there were two persons who were connected with both *Bose Institute & Bangiya Bijnan Parishad* with their scientific activities despite of the lack of formal training. They were Binaykrishna Dutta (1899-1979) & Ashutosh Guhathakurta (1902-1986). These two persons were known jointly as *Ashu-Binay*. They should be regarded as non-formal natural scientists. They did not get the chance to pursue higher education. But they did scientific research and their papers were published in international journals. Their interest area was centered round both botany and zoology. In respect of science popularisation, they regularly wrote in the *Jnan O Bijnan*.

They did excel in the making of scientific tools and apparatus<sup>11</sup>. They made an apparatus, which can be used to note the movements of *banchnaral* leaves. They developed the chroscograph that was invented by Jagadish Chandra Basu. Apart from the scientific apparatus, they also developed some musical

instruments that include *Sitar*, *Rudravina*. They made apparatus for the physics laboratories of the college students.<sup>12</sup>

While the persons like Sitanath, Radhagobindo or Gopalchandra have been remembered for their activities in the first two aspects of science movement, (those are popularization of science and spread of scientific temper), Shibaprasad Bandyopadhyay (1904 – 1995) represents the third aspect of the science movement, that is, the direct use of science and technology for the welfare of the people. His area of interest was agriculture. He made various experiments in his field, situated in Boral near Garia. He made a special coneflower by combining two broccolis of Italy and coneflower of India. This special coneflower was named as poly-flower. Along with that he made tomatoes of different types, combination of beet and palang. Among these, two innovations of him deserve special mention – tangur (tomato+ grave) and Banerjee's Giant (beet+palang)

He made experiments with seeds and fertilizers. His major innovation in this field was *golasar*, which does not need much water. So this Soliar feed was very appropriate for those regions where agriculture was affected by low rainfall.

But he did not have any formal training in agriculture. Only matriculation-passed Shibaprasad did receive encouragement from scientists like Prafullachandra Ray. He was compared with Luther Burbank, an agriculture-expert of the U.S.A. But Burbank received governmental support, which shibbabu did not. His all achievement was out of his own experiments. He stands as a unique figure in the science movement. He had always tried to make people's welfare through his agricultural innovations.<sup>13</sup> But his innovations were never made viable for the markets, so that the people could directly benefit from it. Such was the tragedy of a popular scientist, who was debarred of any official acknowledgement.

Another tragedy of life was that of Abanibhusan Ghosh (1914-1986). He was a science communicator who categorically stated that the reason behind his writing was eradication of superstitions. He wrote a number of books on snakes. In a letter, addressed to Ashok Bandyopadhyay, the editor of the *Utsa Manush*, he wrote 'people know me for my research on snakes. But they did not know that the main reason for this research is the love for the people. Many people used to die due to the superstitions related to snakes for which I engaged myself in the research on snakes. This research is not my profession, rather it is my passion.'<sup>14</sup>

Among his many books on the snakes *Saper katha* got the National prize. Other books include *Sap*, *Sap Niye Kimbadanti*, and *Jato Sab Saper Galpo* etc. For the sake of love for mankind Abanibhusan pursued research, wrote popular articles. He tried to attack other superstitions as well. In the same letter, referred above, he wrote: 'before pursuing research on snakes, I was engaged with the superstitions related to ghosts, fore-telling, fate etc.' He tried to break those blind beliefs. He tried to analyse the so-called super natural issues with the help of science. To establish the methodology of science, he wrote a book namely *Buddhite Jar Byakhya Chale*. In the introduction of this book that book he wrote 'every person possesses the intellect and righteousness but all of them did not nourish that intellect. Those who used that intellect could be termed as the real scientists'.<sup>15</sup> In that book he clarified the scientific reasons behind every incident. For that purpose, he had to refer various theories on psychology, physiology and physics. He also described the tactics behind different popular methods of foretelling. Thus he tried to develop inquisitiveness among people. He had a true scientific mind. He directed his followers either to cremate his dead body in electric crematorium or to donate it to any medical college for the purpose of dissection and not to follow any religious rituals after his death. He clearly stated that the death was the ultimate.<sup>16</sup> This scientific worker had a sharp intellect and inquisitive mind. In his last days, he experienced poverty out of which he died without food and medical treatment.<sup>17</sup> That was the tragedy of life for an outstanding science communicator, who had a true scientific mind.

Through individual initiatives of these people's scientists, the initial formation of a science movement in West Bengal had been formulated. The contribution of these personalities, towards the development of a scientific attitude of the people of Bengal is historically significant.

## Notes and References

1. Irfan Habib, *People's History of India 1, Prehistory*, Tulika, New Delhi, 2001, Preface, p. ix.
2. Rabindranath Tagore, *Jiban Smriti*, Rabindra Rachanabali, Visva Bharati edition, 1396 Bangabada, Vol.9, p-424; translated from Bangla by the present author. A debate may be mentioned here. Tagore probably made a mistake; Sitanath's surname was Ghosh. In his writings Rabindranath mentioned the name of Sitanath Dutta as his science teacher but later the editors of the Rabindra Rachanabali and the biographer of Rabindranath mentioned the name of Sitanath Ghosh as his science teacher. In a review article published in the Anandabazar Patrika on 31<sup>st</sup> May 2003 the reviewer Biswajit Ray mentioned that 'it should be Dutta instead of Ghosh'. And that was followed by a letter to the editor on 17<sup>th</sup> July 2003 where Amitrasudan Bhattacharya had said that the editors of Rabindra Rachanabali and the biographer of Rabindranath had mentioned that Rabindranath did a mistake in naming the title of his science teacher. Bhattacharya asked whether it was a mistake of Rabindranath or of us. Here I have taken the views of the editors of the *Rabindra Rachanabali* and the biographer of Rabindranath; so we have discussed the role played by Sitanath Ghosh in the science movement of West Bengal. For detailed discussion on Sitanath Ghosh's contribution, see: Chittabrata Palit, *Sitanath Ghosh – the Forgotten Pioneer of Technology in Bengal*, in Chittabrata Palit and Amit Bhattacharya edited, *Science, Technology, Medicine and Environment in India: Historical Perspective*, Kolkata, 1998.
3. Jagadananda Ray, *Halley-r Dhumketu*, Prabasi, Phalgun, 1316 Bangabada.
4. Letter of Harvard College Observatory, Cambridge, December 12, 1950; Letter from Consul General for France to confer the distinction of Officer d' Academic, August 1, 1928; Letter of Harlow Shapley, Former Director of Harvard College Observatory, June 20, 1922.
5. For detailed discussions see: i. Sabyasachi Chatterjee, *Nidhiram Sardarer Galpo, the Kalantar Puja* Number, 2000, pp-125-127. ii. Ranatos Chakraborty, *Radhagobindo Chandra*, Swabhab Bijani, Kolkata, 1998, pp- 52-77. iii. Ranatos Chakraborty, *Radhagobindo Chandra*, Tin Abahelito Jyotiska, Kolkata, 1998, pp-57-76. iv. Ranatos Chakraborty, *Jyotirbijani Radhagobindo*, Kolkata, 1999.
6. Jayanta Basu, *Bangla Bhasay Bijnancharchar Prekshapate Bangiya Bijnan Parishad Panchas Bachhar Parikrama*, Kolkata, 2000, pp- 50-53.
7. *Ibid.*, p-147.
8. Memo No. 09(19) 167GAVII dt. 15.07.77.
9. Jayanta Basu, *op. cit.*, p-147.
10. For detailed discussions see: (i) Ranatos Chakraborty, *Prakriti-bijani Gopalchandra Bhattacharya*, Kolkata, 1989. (ii) Debabrata Mondal edited, *Nana Chokhe Prakriti-bijani Gopalchandra*, Kolkata, 2001.
11. Nnan O Bijnan, November 1958, special number on Acharya Jagadish.
12. For detailed discussion see: Ranatos Chakraborty, *Ashu-Binay*, Swabhab Bijani, Kolkata, 1998, pp- 19-30.
13. For detailed discussions see: i. Ranatos Chakraborty, *Shibaprasad Bandyopadhyay*, Swabhab Bijani, Kolkata, 1998, pp-85-99. ii. Ranatos Chakraborty, *Shibaprasad Bandyopadhyay*, Tin Abahelito Jyotiska, Kolkata, 1998, pp-35-54.
14. Translated from Bangla by the present researcher, letter dated 29<sup>th</sup> April 1980.
15. Abanibhusan Ghosh, *Buddhite Jar Byakhya Chale*, Introduction, Kolkata, 1964. For detailed text, see: Ranatos Chakraborty, *Abani Bhusan Ghosh*, Swabhab Bijani, Kolkata, 1998, p- 11.
16. Letter to Ashok Bandyopadhyay dated 7<sup>th</sup> July 1983.
17. For detailed discussions see: i. Ranatos Chakraborty, *Abanibhusan Ghosh*, Swabhab Bijani, Kolkata, 1998, pp-1-18. ii. Ranatos Chakraborty, *Abanibhusan Ghosh*, Tin Abahelito Jyotiska, Kolkata, 1998, pp- 11-32.