



The Swadeshi Movement, National Education, and Technological Modernity: Re-evaluating the Role of Pramathanath Bose in Colonial Bengal

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ABSTRACT

During the late nineteenth and early twentieth centuries, the rise of nationalist consciousness in colonial Bengal was accompanied by a growing emphasis on education and industrial development. The Swadeshi Movement, which emerged in response to the Partition of Bengal in 1905, extended beyond political protest and became a significant force in promoting indigenous industries. This paper explores the role of Pramathanath Bose's ideas and initiative in the development of technical and industrial education in colonial Bengal has been analyzed. As a prominent geologist and educator, he realized that the expansion of science and technology-based education is essential for India's industrial development and economic self-reliance. His thinking is associated with the national education movement and opens new horizons of technological education. In this context, the National Council of Education Bengal established in 1906 and the Bengal Technical Institute and activities established under it are particularly noteworthy.

Pramathanath Bose stood at an important crossroads of intellectual, scientific and nationalist thought in colonial Bengal in the late nineteenth and early twentieth centuries. During this period, Indian nationalism was not limited to political resistance; rather, it gradually expanded to include economic nationalism,

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indigenous industrial development and national education. Especially in the indigenous era after the partition of Bengal, nationalist consciousness transformed into an integrated social and economic project, in which questions of indigenous production, technological efficiency and self-reliance became central.

In this context, Pramathanath Bose's thought carries a unique significance. He realized that strengthening the economic base was essential for sustaining the struggle for political independence within the framework of colonial rule. According to him, the key to this economic reconstruction was science and technology-based education and the development of indigenous industries. As a result, in his writings and works, "economic nationalism" acquired a coherent theoretical form, which enriched the intellectual basis of the Swadeshi movement. In his articles published in contemporary periodicals—especially *Prabasi* and *Bharatvarsha*—he emphasized the expansion of technical education, industrial development, and scientific utilization of domestic resources. His thought was deeply connected with the national education movement and gave rise to a new educational philosophy, the practical reflection of which can be seen in the activities of the National Council of Education, Bengal, established in 1906, and the Bengal Technical Institute under it. In addition, his scientific analysis of the potential of India's iron and steel industry influenced Jamsetji Tata's industrialization initiatives and later played an important role in the establishment of the Tata Iron and Steel Company. Through this, a direct and practical application of Bose's thought can be observed, which establishes him not only as a theoretical but also as a pragmatic nationalist thinker.

Therefore, Pramathanath Bose cannot be seen as limited to just a scientist; Rather, he was a pioneer of economic nationalism, indigenous industrialization, and technical education in colonial India. His thoughts and initiatives contributed significantly to building the economic and institutional foundations of the nationalist movement. This paper analyzes the interrelationship between nationalism, education, and industrialization in colonial Bengal by reevaluating his multifaceted contribution.

Pramathanath Bose (1855–1934) was a prominent geologist, educationist and pioneer of indigenous industrial development in colonial Bengal. His early life and educational background played an important role in laying the foundation for his later nationalist and scientific thought. Pramathanath Bose was born on 12 May 1855 in the village of Gobardanga in the Kushdaha district of North 24 Parganas into an educated middle-class Bengali family. 19th-century Calcutta was the intellectual and educational centre of British India, where Western education, scientific practice and liberal thought were flourishing.¹ This environment had a profound impact on his intellectual development. He received his early education at Hare School, one of the most important educational institutions of the time. Later, he joined Presidency College and excelled in scientific pursuits there.² During this period, he was introduced to Western science, rationalism and

experimental knowledge. He went to England for higher education and studied at the University of London. There he specialized in geology and was directly involved in European scientific methods and research. He was a Fellow of the Geological Society of London in 1879. This foreign trip broadened his thinking to an international scale and developed him in modern scientific perspectives. However, not only Western influence but also the understanding of colonial reality played an equal role in his mental formation. The decline of the Indian economy and industry under British rule affected him deeply. As a result, the idea of indigenous industrial development, technical education and national self-reliance developed in him—which was later clearly reflected in his writings and activities. He married Kamala Devi, the eldest daughter of Ramesh Chandra Dutt. According to Ramesh Dutta, two great personalities were present at Pramathanath's wedding, namely Bankim Chandra Chattopadhyay and Rabindranath Tagore. However, it is said that Rabindranath met Pramathanath while he was in England in 1779-80. Therefore, Pramathanath Bose's early life is not just a history of his personal educational development; it is a reflection of a complex combination of science, nationalism and modernity in the educated society of colonial Bengal. He is known to the people as 'P.N. Bose', the first geologist of Bengal.³

Pramathanath Bose's contribution holds a unique significance in the history of the Swadeshi movement. He was not only a supporter of the movement; he emerged as an important theoretician of economic nationalism. This movement gave rise to a new national consciousness in Bengal, the main elements of which were the boycott of British goods and the expansion of indigenous industries. However, the limitation of this movement was its emotional character, which was not sufficient for long-term economic reconstruction.⁴ In this context, Pramathanath Bose emphasized the need to transform the Swadeshi movement into a well-organized economic program. According to him, the development of indigenous industry, the spread of technical education and the proper organization of capital were essential for the achievement of true Swaraj.⁶ This view set him apart from many contemporary nationalist thinkers, as he sought to build nationalism not only on the basis of political independence but also on the basis of economic self-reliance. The Swadeshi movement led to the development of indigenous enterprises such as 'The Indian Stores', 'Lakshmi Bhandar' and 'United Bengal Co.', which sought to strengthen the indigenous consumer system. However, Pramathanath Bose also pointed out the limitations of these enterprises and argued that industrial development could not be sustainable without proper technical education and government patronage.⁷ For this reason, he gave special importance to the spread of technical education and supported the initiative to send students abroad.

In this context, the establishment of 'The Association for the Advancement of Scientific and Industrial Education' was considered an important step, through which Indian students were sent to Europe and America for higher technical education.⁸ At the same time, his active role in the establishment of the Bengal Technical Institute in 1906 institutionalized the national education movement, which later laid the foundation of Jadavpur University.⁹ Pramathanath Bose's thinking was not limited to the theoretical level; rather, it directly influenced industrialization. His scientific assessment of the potential of India's iron and steel industry inspired Jamshedji Nusseranji Tata, which resulted in the establishment of the Tata Iron and Steel Company.¹⁰ Amritbazar Patrika mentioned about him: "Mr. P. N. Bose passes away—the man who made Tatas possible. An educationist and scientist, he stood for the introduction of Western technological and scientific education in the country... He consistently advocated a system of national education that harmonized with the ideals of Indian nationalism and culture."¹¹ This event can be considered as a practical embodiment of Swadeshi economic nationalism. From the perspective of historical research, it can be said that Pramathanath Bose played an important role in consolidating the economic aspect of the Swadeshi movement. His thought did not limit nationalism to just the cultural or political sphere but linked it with economic and technological modernity, which opened up a new horizon for the industrial development of colonial India.

Pramathanath Bose played an important intellectual and institutional role in the development of the national education movement in colonial India. The Swadeshi movement that began after the partition of Bengal in 1905 was a major part of the national education movement, which aimed to create an alternative to the British-controlled education system. In this context, Pramathanath Bose saw the education system not only as a means of acquiring knowledge, but also as one of the foundations of national reconstruction and economic self-reliance.

According to Pramathanath Bose, the colonial education system was not in line with the needs of Indian society, because it did not give sufficient importance to technical and scientific education. Therefore, he laid special emphasis on the expansion of technical and scientific education. In his book *Technical and Scientific Education in Bengal* (1886), he clearly argued that a strong technology-based education system was essential for industrial development. The practical application of this thought was seen in the establishment of the Bengal Technical Institute in 1906, where he served first as the Principal and later as the Director. The institution later came under the National Education Council and was established as the foundation of Jadavpur University. Later, through the institution, he was able to give a well-organized and institutionalized form to the national education movement. At the same time, he also realized the need for

internationalization of education. On his initiative and through the 'The Association for the Advancement of Scientific and Industrial Education' in 1904, many Indian students were sent to Europe and America for higher technical education. This step played an important role not only in enhancing personal skills, but also in laying the foundation for national industrial development.

The contribution of Pramathanath Bose as a writer is equally significant. His various books and articles clearly reflect the interrelationship between national education, industrial development and economic self-reliance. He called for developing the education system in a way that is compatible with Indian culture and national consciousness, but at the same time connected to modern science and technology.

In 1884, Pramathanath completed a very important work by editing the three-volume History of Science (about 200 pages) published on the occasion of the centenary celebration of the Asiatic Society of Calcutta - at the age of just 29, his background in various branches of science gave him the opportunity to receive this honor. Pramathanath, a thoughtful writer, has left behind a great legacy. A History of Hindu Civilisation during British Rule, published in three volumes (1st and 2nd 1894, 3rd 1896), is a unique achievement of his. The number of books he has written is more than 30. Pramathanath Bose's notable works are Akashkusum (1871), Shishupath (1892), Pratikari Itihas (1884), Technical and Scientific Education in Bengal (1784-1883); Essays and Lectures: On the Industrial Development of India and other Indian Subjects (1880-1906); Natural Science (1885); The Illusions of New India (1916), The Montague -Chelmsford Reforms Scheme - a Constructive Criticism (1918); National Education And Modern Program (1921); Epochs of Civilization (1913); The Root Causes of The Great War (1915); Some Present Day Superfictions (1927); Swaraj - Cultural and Political (1932); Education in India (1930); Unemployment in India (1933); Rudiments of Geology and Physical Geography (1890); Note on Lignite near Raipur (1884); Notes on Geology And Mineral Resources of Sikkim (1891); Terrorism in India: Its Causes and Cure (published posthumously).¹²

Pramathanath Bose's educational philosophy gave a new direction to the national education movement, where education was not only a means of cultural revival, but also one of the tools for economic emancipation and industrial development. His vision helped to make the nationalist ideology of colonial India more realistic and modern.

In the early 20th century, he discovered iron ore in Gorumahisani in 1903 as the State Geologist of Mayurbhanj, Odisha. On 24 February 1904, he wrote an important letter to Jamsetji Nusran Tata, in which he mentioned a rich and extensive deposit of iron ore.¹³ It was on the basis of this discovery and his advice that plans were later made to set up factories in the Dhuli-Rajhara and Sakchi regions. Jamsetpur was born

on 27 February 1908 around the factory set up in Sakchi near the confluence of the Subarnarekha and Kharkai rivers.¹⁴ Pramathanath Bose was not only a geologist but also a pioneer in the exploration of mineral resources in colonial India. His research activities extended from Brahmaputra to Rajasthan and from Kashmir to Godavari. In recognition of his contribution, Jawaharlal Nehru called him one of the first notable scientists of India on his birth centenary in 1955.¹⁵ Similarly, Satyendra Nath Bose praised his pioneering role and placed him on a par with the ancient Acharyas of Bengal.¹⁶

Industrial development and development of indigenous industry in India were the main goals of Pramathanath. On his initiative, the first Industrial Conference was held in Calcutta in 1891 and the second Industrial Conference was held in parallel with the session of the Indian National Congress in 1906, where he was the Chairman of the Reception Committee. The resolution adopted at the conference called on the government to establish adequate technical schools, provincial technical colleges and a full-fledged technical institute for the whole of India.¹⁷ After retiring from government service in 1903, he devoted himself entirely to the work of national welfare and industrial development. In 1905, in the wake of the partition of Bengal by Governor General Lord Curzon, when the Swadeshi and National Education Movement began, he actively participated in it and emerged as one of the pioneers of the economic Swadeshi movement.¹⁸ In 1906, the Bengal Technical Institute was established on Upper Circular Road on his initiative, where he served as the unpaid principal and Nilratan Sarkar was the secretary. Later, this institution was transformed into the Jadavpur College of Engineering and Technology (now Jadavpur University).¹⁹ Many prominent people, including Prafulla Chandra Roy and Jagadish Chandra Bose, contributed to the development of this institution. Pramathanath Bose laid special emphasis on capital, technical education and state security for industrial development. On his advice, institutions like Lakshmi Bhandar, Swadeshi Stores and United Bengal Company were established. ²⁰He was very conscious of the question of economic Swaraj and warned Mahatma Gandhi about it several times. His criticism of the Montagu-Chelmsford Reforms was that it did not create any real possibility of improving the food and living conditions of the common people.²¹ In the last phase of his life, he lived in Ranchi and devoted himself to the development of the tribal community and philanthropic activities. His death was reported in a news report published in Amritbazar Patrika on 28 April 1934 and he was referred to as "the grand old man of Ranchi".²²

Pramathanath Bose is well-established as a brilliant figure in the history of Indian scientific practice and socio-cultural thought. His research papers published in the 1880s are considered one of the earliest contributions of an Indian scientist at the international level. His oil paintings are preserved in the Asiatic

Society, Geological Survey of India and Presidency College, which are an indication of institutional recognition of his scientific contributions. A meeting room in the newly built building of the Geological Survey of India in Salt Lake has been dedicated to his name, and the Asiatic Society awards the “P. N. Bose Medal” every two years to honor his memory. The excellence of his thoughts and actions provides an opportunity to understand the interrelationship of nationalism, education and industrial development in colonial Bengal from a new perspective. In the late nineteenth and early twentieth centuries, especially in the Swadeshi era following the Partition of Bengal, when the nationalist movement was likely to be confined mainly to political protest and emotional programmes, Bose's thought provided a coherent economic and institutional basis for the movement.

This paper has discussed that Bose did not merely advocate indigenous industrial development; rather, he envisioned a long-term economic reconstruction plan, centred on science and technology-based education, the development of a skilled workforce and the effective use of indigenous resources. His vision, linked to the national education movement, played a significant role in the spread of technical education, which was reflected in the establishment and functioning of the National Council of Education and the Bengal Technical Institute. In addition, his scientific analysis of the potential of India's iron and steel industry influenced Jamsetji Tata's industrial initiatives and later paved the way for the establishment of the Tata Iron and Steel Company. This established an important example of the practical application of Bose's thought, transforming him from a theoretical thinker into a pragmatic nationalist. However, despite some limitations of his thought—especially its social scope and its obstacles to implementation within the colonial framework—his contribution cannot be ignored. Rather, it can be said that he represented an alternative nationalist trend in which political independence was deeply linked to economic self-reliance and technological modernity. During the celebration of his birth centenary in 1955, Jawaharlal Nehru said, "I think he is one of our first remarkable scientists and a great geologist." Another scientist, Satyendra Bose, commented on this ‘pathetic’ scientist, “Both Jagadish Chandra and Prafulla Chandra are scientists of national renown. Before them, another Bengali scientist from Beel, Biditya, returned to the country, he was the geologist Pramathanath Bose. Pramathanath’s life had elevated him to the level of the Purbacharyas of Bengal over time.”²² Therefore, Pramathanath Bose’s contribution to the history of the nationalist movement in colonial India deserves an important reassessment. His thought reminds us that nationalism is not limited to political liberation; rather, it is an integrated project of economic power, technological expertise and institutional development.

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