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## **Emerging of Science Education in India**

**Biplab Majundar**

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Education had been known to Indian since long time. So wrote F. W. Thomas in his 'The History and prospect of British education in India' in 1891, —where the love of learning had so early an origin or has exercised so lasting and powerful on influence. From the simple poets of the Vedic age to the Bengali philosopher of the present day has been an uninterrupted succession of teachers and scholars<sup>1</sup>. The base of Indian education since the Vedic age is classical and spiritual rather than of practical in nature. Ample examples are found in Sanskrit literature in this regard. The Buddhist reformers made gave more emphasis on education and religion to make them popular. The Chinese travelers and the Pail texts are the evidence in its favour and the vast monastery of Nalanda appeared as a seat of learning in the seventh century A.D. After the Muslim conquest, the mosque became the centre of learning and instruction.

Broadly speaking, there emerged three different types of educational institutions in ancient India which the culture of the country preserved and propagated itself. Firstly, there was the normal system under which the teacher, as a settled householder, admitted to his instruction pupils of tender age; secondly, there was another type of institutions which ministered to the never-to-be satisfied needs of the advanced students and the third type of institutions developed for the spread of learning. Besides the small circles of philosophical disputants, and parishads or academics, of different localities, there was occasionally summoned by a great king a national gathering or congress in which the representative thinkers of the country of various schools were invited to meet and exchange their views <sup>2</sup>. In 1600 the main intention of the British was related to commerce and then it expanded its influence in the arena of administration and politics. The company had shown no interest to spend money to spread the light of education among the Indians till the mid-nineteenth century. Their interest grew only to translate English textbooks into Sanskrit and Arabic, and to establish English schools and colleges. The Christian missionaries began to teach Western subjects through the medium of English and these missionaries began their journey in the sixteenth century. Scientific and technical education was totally neglected in India. The East India Company wanted to produce clerks and administrators to run its administration in India. With the intention to preserve laws, literature and religion, the Calcutta Madrasa (1781) and a Sanskrit College (1798) at Benaras were established<sup>3</sup>.

"It is common remark that science and literature are in a progressive state of decay amongst the natives of India...The number of the learned in not only diminished; but the circle of learning, even among those who still devote themselves to it, appears to be considerably contracted. The abstract sciences are abandoned, polite literature neglected, and no branch of learning cultivated but what is connected with the peculiar religions doctrines of the people...l (Adam's Report, 1868). But, science education occurred earlier in India than in Britain because: i) there was no tradition of a classical curriculum to stand in the way of science in the company's schools; and ii) knowledge of science would aid in the productivity of and improve the conditions of life in India, which to the British, was in much need of improvement<sup>4</sup>. In spite of the Company's negligence private individuals and organisations came forward to establish schools. The Calcutta School Book Society (1817) and the Hindu College (1817) were notable of them. Two approaches in respect of education were advocated to the Governor General, Lord William Bentinck. Some educationists i.e. Orientalists favoured the requirement of

teaching in Indian languages and promoting oriental learning and Anglicists, stressed on English education. But the British government expressed their view in favour of English education. As a result of it a radical change came in all spheres of society. Persian was abolished as the language of record and English language took its place. In the first two decades of the nineteenth century, education given to the Indian was limited to languages and English was not the medium of instruction. The Hindu College, Calcutta (later Presidency College) was an exception where emphasis was given on English and other subjects like astronomy, arithmetic and chemistry were taught. A science college was established in Calcutta in 1814. Based on Macaulay report (1835) many educational institutions were established with the accessibility to western science. By the mid nineteenth century European scientists started coming to India. The British realized that they need well- trained Indians in the field of S&T for their own sake. The local governments, especially Bengal did not want to give up vernacular education in spite of great disadvantage in the sphere of promotion and financial support. Vernacular primary schools began to establish in the remote areas with an intention to introduce English at higher level of education. The first Indian universities (in Calcutta, Bombay, and Madras) came into existence in the mid 1850s. But, the medium of teaching in preparatory schools and university level was in English. Only in the late nineteenth century, more emphasis was given on Indian languages and culture in Indian education.

In Wood's dispatch (1854), both liberal and paternalist strands were woven together into the proposed fabric of a complete system of education for India. This Despatch marked the beginning of Mass Education which was a departure from the Filtration Theory. It is considered as the "Magna Carta of English Education in India" (Edwards, 1967). Since Wood's Despatch, a number of committees and commissions had been appointed by the colonial government to examine the problems of education in India from time to time. Of all, the most important was perhaps the Hunter Commission (1880-1882) (Sen, 1989). The Hunter Commission of 1882 strongly criticized the academic and theoretical character of Indian education and suggested for the introduction of technical education even at the secondary stage. Between 1850 and 1900- only five universities were established in Calcutta, Bombay, Madras, Allahabad and Punjab. Science education suffered because of lack of employment and promotional opportunities in the scientific departments, which the Government had carefully kept as a close preserve for Europeans and Eurasians. During the last decade of the nineteenth century, demand for technical and scientific education was increasing in India. The College of Engineering and Technology at Jadavpur in 1906 was established by the National Council of Education. It first started a diploma course in mechanical engineering in 1908 and then introduced a course in chemical engineering in 1921. Then J R D Tata established the Indian Institute of Science (IIS) at Bangalore in 1909. In 1915, the IIS started a certificate course and an associateship course (at degree level) in electrical engineering.

The educational Code and the Universities Act introduced by the Governor-General Curzon in 1904 brought forth a unitary and centralized system of education in India. In the first decade of the twentieth century in India, 85% of students graduating did so in Arts, 9% in Medicine, 4% in engineering and only 2% in science. The number of college students, however continued to increase from 17356 in 1907 to 61200 in 1917 (Edwards, 1967). Asutosh Mookherjee played a vital role to introduce science teaching and research at the University of Calcutta which started post-graduate teaching and research in 1916. From the second decade, the establishment of the universities picked up pace and in 1920s, almost every year saw the establishment of one university. University of Calcutta started the Department of Chemistry, physics, mathematics and geology in 1914, 1917, 1919 and 1925 respectively. The Banaras

Hindu University (1916) which was established Pandit Madan Mohan Malviya took initiative to promote both the modern and traditional sciences and technology side by side.

The new Indian constitution was published in 1921 and education-related all issues were transferred from the British to Indian control. State or provincial governments were mainly responsible to take decision about education related subjects. As early as 1924, a conference of Indian universities set up an inter-university board to establish, among other things, standardization of academic qualifications.

In 1936-37 the government invited two expert advisers, A. Abbot and S. H. Wood, to prepare a report on —certain problems of educational reorganization and particularly on problems of vocational and technical education. In 1939, just after Second World War started, the colonial government of India started a massive training scheme known as —War Technicians Training Schemes on a nationwide basis for the first time in 1940.

The Second World War made an adverse effect on the promotion of scientific and technical education. The Sargent Committee in 1944 strongly expressed its view for the expansion of technical and vocational education in India. Meanwhile, a committee was formed under the chairmanship of N. R. Sarkar to suggest steps for development of higher technical education. The All India Council for Technical Education (AICTE), the most important body to provide the central and state governments' necessary advice in respect of technical education came into existence on November, 1945. During last years of British India, educational facilities continued to expand. The number of colleges offering higher education increased from 425 in 1940-41 to 593 in 1945-46. Till the end of seventeenth century only one or two Europeans were taking interest in scientific pursuit in addition to their normal activities. In the eighteenth century it is found that with the increase of British control over the Indian soil, mainly after 1757, more and more Europeans, especially British, were engaging themselves in studies. After 1850, due to several factors and infrastructures, there was an increase in the publication of periodicals in India.

Factors like introduction of new system of education in several new subjects particularly sciences and engineering, the emergence of printing industry, the expansion of postal system and railway system made possible to start a considerable number of new periodicals of all subjects during the period. Almost 125 years after the first journal was started in France, the first journal was published in India. This reason increase Science education in India.

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