

BENGALI ENTREPRENEURS AND WESTERN TECHNOLOGY IN THE NINETEENTH CENTURY: A SOCIAL PERSPECTIVE

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The paper tries to elucidate the history of 19th century business ventures initiated by the enterprising Bengalis based on the western science and technology. This was mostly known as a period of arrested development for indigenous business enterprises in Bengal. But the rise of Ramdulal Dey, Dwarkanath Tagore, and others establishes the fact that there was no dearth of entrepreneurial abilities in the period. Dwarkanath successfully utilized modern technology for business ventures followed by Hemendramohan Bose, Kishori Mohan Bagchi and above all the great scientist of Bengal P. C. Ray. The paper seeks to explore the perceptions and response of the Bengali entrepreneurs towards technology as an agent of industrial development of the country.

Key words: Entrepreneurship, Modern technology, Technical knowledge.

INTRODUCTION

“Foreigners come here and in a short time earn enough to live in comfort back home, and our country is being pumped dry in the process. Perhaps things will now change. Downtrodden Hindustan will now compete with other trading countries. Many others follow the path shown by Tagore (Dwarkanath) and engage in similar ventures, which are beneficial and bold and deserve praise, and thus help remove the bad name of the Hindus as idle and ignorant.”

*Jñānāneshan*¹, 9 August, 1834

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“When I founded the BCPW (Bengal Chemical and Pharmaceutical Works Ltd in 1892) I had not only the idea of wiping out the reproach that the Bengalees were good for nothing in business affairs, but also of making it a model institution.”

P. C. Ray to a colleague at BCPW (1897?)².

The nineteenth century was a century of arrested development for indigenous business enterprises in Bengal. This has engaged the attention of scholars for long and no single agreed explanation exists to account for it. The standard trope informs us that Indians as a nation were indifferent to business, lacking enterprise and acumen, averse to toil beyond raising enough crops to sustain them.³ Yet there were many Bengalis who started their own business enterprises. How they emerged is certainly a very important area of historical research. In the second half of the nineteenth century the number of Bengali enterprises arose with moderate success, not even that few of them successfully utilized modern science and technology in their business ventures. They were not the borrower of western technology, but employed their own technology based on rigorous research. The present paper seeks to restore the history of Bengali entrepreneurship in various modern lines and identify their approach in science and technology.

THE AGE OF GREAT ENTERPRISE

Technical education is but one way in which the culture of technology spreads. Another way is through enterprises and experience. European enterprises and government agencies restricted non-Europeans to the lower jobs until they were forced to do otherwise by political pressures at the very end of the colonial era. Enterprises owned by the Indians, in contrast, had every incentive to use their own people, for reasons of ethnic solidarity as well as economy.⁴

Entrepreneurship alone does not lead to economic development. The kinds of enterprises that could have led to economic development required other elements: information about foreign machines, technical processes, and business practices, information which was not forthcoming from the educational system.⁵ In other words, they had to be importers of technologies from western countries, mainly Britain.

India was once a manufacturing nation whose industrial products supplied, for centuries, the needs of vast Asian and European markets; spinning and weaving and other handicrafts had provided whole-time or part-time employment to millions of men and women. But all these had gradually disappeared with the advent of the British. One of the most momentous consequences of the establishment of British supremacy was the disruption of the centuries' old union between agriculture and manufacturing industry as a result of the progressive decline and destruction of the Indian town handicrafts and village artisan industries.⁶ Thus British rule brought the destruction of traditional handicrafts along with their technical know-how, drainage of wealth through direct plunder and revenue extraction, and the transplantation of Western type industrial capitalism in India.⁷ The fact that England underwent an industrial revolution while India could not stage one gave England the superiority she deserved. Superior manufacturing methods based on steam power and improved machinery enabled British manufacturers to undersell Indian artisans in their own country. The mechanization of industries, the growth of capital, the institution of the joint-stock company and managing agency, and the monopolization of colonial markets for finished goods, enabled England to score a complete victory.⁸ Contemporary Bengali journals were vocal about the necessity of indigenous enterprise to strengthen the economy through out the nineteenth century. *Samāchār Darpaṇ* reported:

“Europeans properly utilized capital and achieved a distinct place in world civilization by their business skills. We are advising our fellow countrymen to give up their laziness and follow the European path of business. They should learn from the people of western India how to start business ventures successfully. The Bengali people prefer to lend money with interest to Europeans. Here the irony is the poor Europeans become rich by properly utilizing the loans in various business ventures and the rich Bengalis become poor. So the affluent class of our society should start their own business and stop flattering the Europeans. Then only Bengal can start her journey towards the road of prosperity.”⁹

Modern business activities developed by the European agency houses in the early part of the century had a substantial element of Indian partnership before new developments drew a clearer line between the black and white spaces. The agency houses¹⁰ were originally the carriers of private European trade in Asian waters. These agency houses built ships, employed them in

the trade of the Indian Ocean, and by a natural extension went into the promotion of insurance companies and banks. In Calcutta they promoted industrial ventures inland: they financed the indigo planters, they sank money into silk filature, and even came to manage some indigo concerns themselves. The history of the agency houses falls into three periods.¹¹ From 1783 to 1813 the houses were few in number and their partners closely associated with company officials who were also their constituents. The second phase began after the opening of India to private trade in 1813, when a large number of new houses were formed by adventurers from Britain. The third phase of agency-house history began in 1834 and lasted until the commercial crisis of 1847. In the second phase, although there was moderate participation of the Bengali businessmen, in the third phase they emerged as active partners of various managing agency houses.

Closely associated with the agency houses were their brokers. Their function was to bring in and guarantee contracts for the supply of exportable produce from inland merchants. The brokers were called *Banians* in Calcutta.¹² Sometimes they might be important merchants conducting business on their own. Raghuram Gosain, the Bengali *banian* of Palmer & Co., was a rich merchant in his own right. The early-nineteenth century *banian* Ramdulal Dey was a model, who acquired a fortune as a factor for the American traders. The *banians* were English-speaking Bengalis from *Brāhmin*, *Kāyastha*, and *Banik* castes, frequently financiers of their European principals. Motilal Seal, a Bengali ship-owner and merchant magnate, lent money while acting as broker to Oswald Seal & Co.¹³ Dwarkanath Tagore in his own unique way became a pioneer entrepreneur of the mid-nineteenth century.

Dwarkanath Tagore (1794-1846)¹⁴, a western-educated Bengali Brahmin, was acknowledged civic leader of Calcutta during the 1830s and 1840s. Though a brilliant entrepreneur, he subordinated his business activities to political and social ends. Tagore envisioned a future India that was westernized and industrialized and whose inhabitants enjoyed, without discrimination, the rights and liberties of Englishmen.

Carr, Tagore & Co. was the first equal partnership between European and Indian businessmen and the initiator of the managing agency system in India. Dwarkanath launched the firm in 1834 with the partnership of William

Carr, a respected indigo trader of Calcutta. Tagore not only provided the firm's capital, but selected the partners, directed the investment strategy, and through out his life time, actively guided the house. Carr, Tagore & Co. was, in fact, more a patriarchy than a partnership. The incident drew the attention of the Bengali press, as *Samāchār Darpaṇ* observed:

“Carr, Tagore & Co.

The new firm of Carr, Tagore and Co. is announced today. The second member of this firm is Baboo Dwarkanath Tagore, some time Dewan of the Salt Board, which office he vacated about six weeks ago for the purpose of commencing the career of a general merchant and agent. The circumstance is worthy of notice since it is the first instance of a Hindoo adopting European habits of business in Calcutta, and entering into the field of agency and foreign commerce on European principles...”¹⁵

When the Calcutta Chamber of Commerce was set up in 1834 Dwarkanath became one of its members¹⁶, along with Rustomji Cowasji¹⁷. Tagore's fortune had been founded on landholding and money lending, and among his business interests were the import and export trade, indigo and silk manufacture, sugar refining, ocean shipping, docking, newspapers, insurance and banking.

In the Indian community, as in government circles, the climate of opinion was ripe for Dwarkanath's move. Ever since the commercial crisis of 1830, the idea of Bengalis launching modern business firms had been under discussion in the Bengali press. The conservative *Samāchār Chandrikā* urged zamindars to purchase and operate the European-owned indigo factories left idle by the crisis and forestall the colonization of the countryside by Europeans.¹⁸ The moderate *Reformer* called on the Bengalis to ‘compete with the nations of Europe and America, not only in English literature, but in fine arts, sciences and commerce’; Hindus could no longer blame their religion for entrepreneurial backwardness because there were now ‘enough enlightened Hindoos who can lead the way.’¹⁹ Radical Young Bengal, voicing their opinions in the journal *Jñānāneshan*, urged their countrymen to cast off their ‘natural idleness and lethargy, and armed with the weapons of business, commerce and industry, triumph over the enemies of their prosperity.’²⁰ When Dwarkanath launched his firm, Young Bengal found a hero.²¹

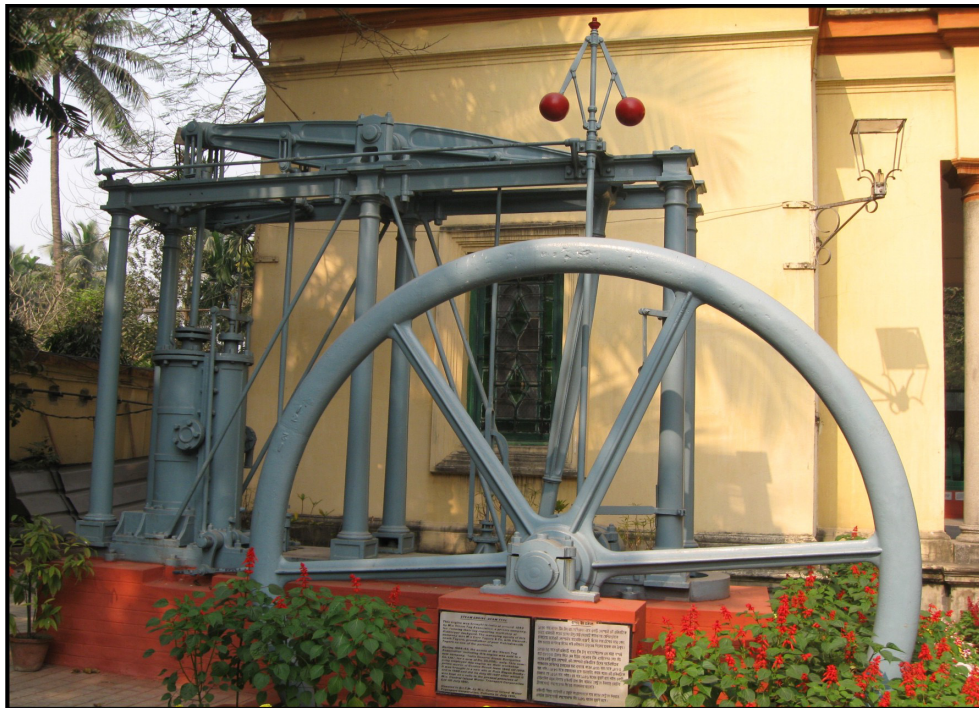


Fig. 1: This tug engine was brought to India at around 1840 by M/S Steam Tug Association for running their tug repairing workshop at Kidderpur Dockyard. The managing agent of this company was M/S Carr, Tagore & Co. with Dwarkanath Tagore as one of the partners. (Courtesy of the B.I.T.M, Kolkata)

On 2 January 1836, Tagore made the most momentous investment of his entire career. He purchased for 70,000 rupees India's largest coal mine, the Raniganj Colliery, in Burdwan.²² To further the sale of coal, Tagore promoted during the next decade a series of coal utilizing enterprises and was responsible, more than any other individual outside of government service, for leading India into the age of steam engine. Between 1836 and 1846 Dwarkanath promoted six joint stock companies: the Calcutta Steam Tug Association (1836), the Bengal Salt Company (1838), the Calcutta Steam Ferry Bridge Company (1839), the Bengal Tea Association (1839), the Bengal Coal Company (1844) and the India General Steam Navigation Company (1844).²³ He was also one of the doyens of the modern system of banking in India. The Union Bank, of which he was a director²⁴, contributed to the

development of native trade and commerce by extending commercial credit. Rowland Macdonald Stephenson, the pioneer of the Indian railways, came to India to survey the route and to urge support for his plan in 1844. Dwarkanath realized the importance of railways for the upliftment of the economy and extended his support. His friend William Theobald wrote to Stephenson that Tagore 'is very desirous to have a Railway to the Collieries (Raniganj), and would raise one-third of the capital for this portion of the line, if undertaken immediately.'²⁵ Towards the end of his life, he joined in the promotion of the Great Western of Bengal Railway Company.²⁶

One of Tagore's goals was to carry over the commercial partnerships and other organizational forms of the mercantile age into the industrial age. A second goal was to import the industrial revolution into India and to adapt the steam engine to commercial use. While launching Carr, Tagore & Co. he rightly said his house would be an instrument of national regeneration and a model to be emulated by his countrymen.

The careers of Motilal Seal, Ram Gopal Ghosh, Digambar Mitra, Surya Kumar Tagore, Raghunath Goswami, Bholanath Chandra, etc. only illustrate that there was no dearth of entrepreneurial ability among Bengali people in the first half of nineteenth century. In an essay on Motilal Seal, Kissory Chand Mitra admonished Bengali youth for considering government employment the pinnacle of all careers; he encouraged them to emulate the great merchant of the 1840s. Kissory Chand asked why it was that 'this most fertile province has been sunk, till late, in poverty and intellectual torpor? It is chiefly because industrial activity and commercial enterprise have not come to convert it into a garden.'²⁷ They successfully utilized the prevailing atmosphere in their favour and acquired a huge fortune. One observer noted that the new *banians* had 'assumed airs which their more wealthy predecessors had never taken on themselves; they treated their European connections not only with contemptuous disregard, but often with much insolence. The Hindoo star was in the ascendant, and these men made the most of it.'²⁸ By 1840 it appeared that Calcutta and its hinterland were on the threshold of a small scale industrial revolution. Despite the paucity of capital, the local business community embarked upon a broad range of steam-powered industries. In 1844 one observer noted that 'on approaching Calcutta, the smoke chimneys of steam-engines are now seen in every direction, on the either side of the river, presenting the gratifying appearance of a seat of numerous extensive

manufactories, vying with many British cities.²⁹ Then a series of commercial crises shook the Calcutta business community and by 1850 the momentum failed. If the dynamism of the 'age of enterprise' had been sustained, if the 'industrial revolution' of the 1840s had not been aborted, Bengal might have developed indigenous industries with its natural and human resources.

THE MOMENTUM FAILED: *BHADRALOK* PERCEPTIONS

For a brief interlude at midpoint in the history of Bengal-the 1830s and 1840s-Bengalis were the most active associates of the British in the modern sector of the economy. The era of Bengali participation coincided with the growth of interracial civic institutions and local community spirit. It also witnessed the introduction of the steam engine on a commercial scale, the development of new industries such as tea, steam shipping, and coal mining; and the application of new forms of business organization: the joint stock company, the managing agency system and commercial banking.

In the first half of the nineteenth century Calcutta's largest business institution was the Union Bank. But due to unsound exchange transactions with London and insecure advances in the falling indigo market, the Union Bank crashed in 1848,³⁰ bringing down with it various others. Indian enterprise in Calcutta, including the giant Carr, Tagore & Co, which had sprung up in partnership with Europeans, suffered a blow, from which it did not recover.³¹

After mid-century the international environment was no longer favourable to the growth of big Indian business in the country's ports and abroad. Between 1850 and 1880 a series of technological and organizational changes-the completion of the railways reaching far into the interior, the development of the steamship services through the Suez Canal, and the linking up of the inland telegraph and the overseas cables into one gigantic world-wide system of information at electrical speed³²-decisively shifted the business balance of power away from smaller Indian firms to bigger European firms in India, and from India itself to the world centre of trade and finance located in the city of London. From the suppression of the Mutiny (1858) to the outbreak of the First World War (1914), private European enterprise, which had already established new forms of industry, enjoyed a position of unchallenged supremacy in the Indian economy.

The enterprises undertaken during the period from 1830 to 1850 were poorly managed and failed to make good use of modern technology. Although Dwarkanath tried to incorporate western technology in his business ventures, many of his enterprises failed or nearly failed as a result of poor management. His fundamental error was to miscalculate the strength and to misread the nature of the British commitment to India.³³ Carr, Tagore & Co. was not truly a partnership of equals. Dwarkanath established the house and invited William Carr, William Prinsep, and other impecunious British merchants to join him in the use of his capital. They had nothing to lose and everything to gain by accepting his offer, and they left for home as soon as possible. Nor did the British reciprocate his bid for genuine social intercourse. It was at his home that they gathered to be lavishly entertained; they did not return the invitation. If Dwarkanath wanted interracial cooperation, he had to provide the framework, whether it be a charitable society or a joint-stock company. Dwarkanath labored in vain, for the British would not accept genuine partnership with an Indian.³⁴

In the first half of the nineteenth century the European trading companies employed as compradors *Brāhmins* and *Kāyasthas* as well as members of the indigenous trading and artisan castes—*Subarnabaniks*, *Gandhabaniks*, *Tantubaniks* and *Telis*.³⁶ We have seen that, from 1750 to 1850 the Bengali compradors or banians steadily rose to prominence in the economic life of the province. After 1850, those employed by these firms were gradually reduced to the status of petty clerks, and then dismissed in favour of young Englishmen.³⁶ Thus the *banians* of Calcutta were eliminated from modern business as the economics of empire attained maturity.

Since the early nineteenth century spokesmen of the Bengali middle class have searched for the causes of entrepreneurial backwardness and for ways to stimulate business enterprise among Bengalis. Basically the problem of the Bengalis was one of conflicting values. There were deep-seated social and cultural factors. Power over land, not mercantile or industrial enterprise, was the economic hallmark of social status. Trade was associated with low ranking castes, *Brāhmins* and *Kāyasthas* considered only the intellectual and administrative professions as proper occupations. Thus the indigenous Bengali elite turned its back on business and left modern industry and international commerce in Calcutta to Europeans.³⁷ The Bengalis preferred landlordism to

business when the Permanent Settlement offered opportunities for investment in landed estates.³⁸

Throughout the British period, the timidity of Bengali entrepreneurs was a recurrent topic of Bengali writers. The campaign was begun as early as the 1830s by the spokesmen of Young Bengal. They criticized those *banians*, who instead of launching their own commercial ventures, supplied British merchants with capital.³⁹ In the 1840s and 1850s, the chauvinistic Iswar Chandra Gupta, editor of the *Sambād Prabhākar*, became the chief advocate of independent mercantile enterprise. One Tarini Charan Chaudhury, school student of Medinipur, voiced his anger over the idleness of fellow Bengalis regarding business and enterprise in *Prabhākar*.⁴⁰ On this the editor of the journal observed:

“We have published the latter of Babu Tarini Charan Chaudhury of Medinipur on the condition of our country in the Student’s Column of today’s *Prabhākar*. We are happy that Tarini Babu requested his fellow countrymen to start their own business enterprise. We have written on the subject on several occasions, but unfortunately all in vain. The people of Bengal are against any kind of hard work. They prefer to spend their time at home with no energetic work. From the attitude of such countrymen, we can easily assume the reason behind the miserable condition of the country. Forget about foreign trade, they are not interested in inland business also, not even within Bengal. Those with wealth, prefer to lend money to the Europeans for the sake of ‘tension free’ income from interests. Only if the affluent Bengalis start their own business enterprise, they can bring back the prosperity of our country.”⁴¹

On another occasion the journal wrote:

“The improvement of the material condition of our people is a major concern of all. Our government has closed the door of various prestigious jobs to Bengali people. So there is little hope of employment in the government sector for them. There are many obstacles in the field of independent business also. Bengalis are not acquainted with the business skills, especially in foreign trade. Due to religious taboo they cannot cross the ocean. The traditional business classes have a very low status in our society. So for the upper castes (*Brāhmins* and *Kāyasthas*) to involve in trade is a shameful matter.

Many suggest that the rich people should engage in business enterprise like Englishmen, so that others can be inspired by their initiatives. This is very much true. But the irony is they don’t have the necessary courage

to start such ventures. They prefer to nourish the business of the Europeans by sponsoring them and acted as *banian* in the European firms.

So the prospect for Bengal is not very bright. The lower clerical posts are the only hope. Unless the government removes the ban on recruiting Indians to higher governmental jobs and the Bengali people start their own business enterprise, there is no sign of hope.⁷⁴²

The *Sambād Pūrṇochandrodaya* observed:

“If our countrymen start their own business enterprise, then they can live an independent life. Few of our brothers understood this and started their own business ventures. But the general trend is not very encouraging. Actually in business, the entire risk relies on the investor. So our Bengali friends are afraid to take such risks. They hand over their wealth to the Europeans and secure the head clerkship in those European firms. Although a few people have sufficient money to start their own business enterprise, due to lack of stamina they are unable to take such steps.”⁷⁴³

The journal *Sambād Prabhākar* maintained a conservative stand on various social reform movements. It vehemently opposed the Westernization of Bengali society and supported traditional Indian culture. But in the field of trade and commerce, it was a follower of the Western system of business enterprise. The editors criticized the Bengali people for not entering trade and commerce like their English counterparts. Once they reported:

“The prospect of a country depends on trade and business. The Bengali people like to do slavery. When a child gets a little education, his father takes him to his European master for a clerical job. Due to this trend, our country is suffering a lot. Many intelligent students are forced to join clerical jobs, abandoning their study.

In the developed countries, students after getting proper education, start their own business enterprises. By following this line, countries like England, France, and America became so prosperous. But the picture is entirely different in our country. The rich Bengalis prefer to depend on ‘interest’ from their wealth. So the independent business culture becomes very rare in Bengal. Unless they start their own business enterprise in large numbers, there is no hope for our country.”⁷⁴⁴

The urban industry of India, at the beginning of the nineteenth century, was mainly handicrafts, producing fine textiles or other luxury products for the aristocracy. There is little doubt that in these handicrafts Indian urban industry had reached a high-water mark of excellence. The products of Indian industry enjoyed a world-wide reputation. Among these the cotton

industry was easily the first. But the nexus of colonialism destroyed the Indian textile industry. India became the chief exporter of raw cotton and the biggest importer of Manchester clothes. The textile industry became extinct and there was no initiative to revive the once most flourishing industry of India. Observing that well circulated journal *Somprakāsh* wrote:

“Promotion of indigenous enterprise-

Recently the Russians adopted a policy to promote their trade and industry. They have taken an oath not to wear anything except Russian clothes. Almost a hundred years ago the Americans were entirely dependent on Britain for clothes like us. During the American freedom movement, the people of that country opposed the English made clothes and started building their own textile industry. Today American clothe is the biggest competitor of Manchester.

In many European countries there is no business of Russian clothes. On the other hand many Russians love to wear foreign made clothes. But inspite of that they are determined to wear only Russian clothes. Their government also started encouraging cotton cultivation. Combining these two, we hope the Russian textile industry will flourish very soon.

Now let’s turn to India. The whole of Europe depends on Indian cotton and its cultivation is increasing day by day. But we should think of the long term prospects. If Manchester gets cheaper cotton from other places, then what would be the condition of several cotton cultivators of India? If we really bother for our country, then we should devote ourselves to start textile industry in our country. Every year India imports huge amounts of clothes from England. So we are requesting our countrymen to not sit idle and do something to promote the textile industry.”⁴⁵

The upper-caste Bengalis were partial to administrative, professional, and intellectual occupations. As the expansion of British rule increased, young Bengalis flocked to the colleges to prepare themselves for careers in administration, law, medicine, journalism and education. In Dwarkanath’s day, business was still a possible component of the *bhadralok* life style, but after the middle of the nineteenth century, training for a profession was usually substituted for entering business. Not only were there more opportunities in the professions, but these careers were more in accord with the *bhadralok* value system.

Entrepreneurship was a recurrent theme in the editorials of the *Tattobodhini Patrikā*, leading journal of the 1870s. “Our young men excel

in all other spheres”, wrote the editor, “but in business they were apathetic.”⁴⁶ He urged the orthodox to defy the injunction against crossing the oceans and to take up international commerce. And he called on those who had flaunted the taboo and were studying in Britain to train in business instead of the liberal arts and upon their return to establish schools of commerce in Bengal.⁴⁷

The *Amrita Bāzar Patrikā* observed:

“Our country is developing very fast. So the people of this country should start various business enterprises considering the current economy. If they try hard, they will definitely be successful. Honesty and punctuality are the two requirements for successful business ventures. Why is America so prosperous? What are the reasons behind the advancement of Britain and other European countries? The only answer is trade and industry.”⁴⁸

Somprakāsh wholeheartedly wanted modern industry to be established in Bengal. Tirelessly it campaigned for the cause. Once the journal observed:

“The development of Indian industry has been ruled by Englishmen for more than a hundred years. We have observed many changes during this tenure. But there is no sign of industrialization in India. Why did we not learn industrial education during these hundred years?

The answer to this question lies in three facts. Obviously there are other reasons also, but these three, according to us, are the prime cause. Firstly the development of modern industries in Europe; secondly India lost its sovereignty to England; and third is the lack of business skills among Indians.”⁴⁹

Such an assessment only proved the maturity of the Bengali press of nineteenth century. Gradually they started realizing that not only Bengali character, but the subordination of India by a foreign country was also responsible for India’s industrial backwardness.

Somprakāsh frequently dwelt on the growing problem of educated unemployment. For example, the journal once wrote in its editorial:

“They (i.e. the job-seekers) don’t have the means to get hold of capital for taking up business or industry...Students of Civil Engineering can look for no improvements; the Medical Department has no vacancy to absorb even one more person...”⁵⁰

Sādhārani, another important and popular journal of nineteenth century, shared the concern of *Somprakāsh* for the promotion of Bengali business and industry and was sharper in its opposition to the existing scheme

of things. To cite a few examples, it once remarked that rich Bengalis were invariably accustomed to making wealth from government bonds, house-rent, rack-renting and seizure of revenue free lands;⁵¹ it also had a clear recognition that ‘the real wealth of the country lay in the fertility of its soil and in the labour and enterprise of its people’.⁵² Again, in its disavowal of the allurements of government service, *Sādhārani* wrote that a resort to free enterprise in agriculture or business would save people from the daily ignominy of being called ‘savage niggers’ by their foreign masters.⁵³

In the second half of the nineteenth century great private wealth was rare and concentrated mainly among big landlords who in their aptitude for conspicuous consumption were oriented neither to investment nor enterprise. Bengali merchants showed little inclination to turn into industrial entrepreneurs. The fact of uneven competition with British manufactures ruled out the scope of entrepreneurial efforts on the part of men of moderate means.

SWADESHI ENTERPRISE

When we speak of *Swadeshi*, we generally think of the period which was directly linked with the partition of Bengal (1905). In a broader sense, however, it embraces a larger period, started in the 1870s and continued till 1947. During that period, *Swadeshi* ideas of different strands took shape, handicraft industries showed signs of revival, modern industries were set up, and technical education was disseminated through the newly constructed technical institutions.

The country had no state of its own; it was a subject of the British Empire. Patterns of change sponsored and executed by such a system of power did not make for the emergence of an advanced mode of production, informed with its own intellectual and moral equipment. The pace and content of transformation was subservient to the more primary object of colonialism to generate wealth in India and use it for the advancement of Britain’s own social order. This was inherent in all the twists and turns of imperial statecraft, however masked such exercises were in the ideologies of Orientalism, Evangelism or Liberalism.⁵⁴ Official economic policy in the nineteenth century cannot really be explained in terms of an abstract creed of *laissez faire*,⁵⁵ and government expenditure on the railway, military and public works departments

did encourage certain types of industries; yet the crucial point is that the benefits of such state patronage went overwhelmingly to Europeans. In Bengal the age of great Calcutta merchants and entrepreneurs collaborating and competing on equal terms with the British was definitely over by the 1850s. The Bengali business community by the late nineteenth century consisted of socially not-too respectable 'second-hand merchants and commission traders doing small scale business'⁵⁶ and even here the Bengali traders were being squeezed out by the *Mārwaris*.⁵⁷

Recently a scholar has raised his voice against the inadequate importance given to the small and middle bourgeoisie by the economic historians of India.⁵⁸ The small and middle bourgeoisie, unlike the big bourgeoisie, were neither brokers nor intermediaries of foreign capital. They were self-reliant in capital, management, and marketing. Although they depended to some extent on foreign machinery, there were many examples of self-reliance in this field too. Despite their limitations, they sought to be self-reliant in the field of technology. In the study of the indigenous enterprise in the *Swadeshi* era, the small and middle bourgeoisie deserve special importance.

In Bengal the idea of *Swadeshi* may be traced back to the efforts of Nabogopal Mitra, who, in 1867, organized the annual Hindu *Mela* which regularly met for nearly fourteen years. One of the major functions of the *Mela*, apart from its other nation building activities, was the promotion of indigenous manufactures. Nabogopal Mitra was inspired and supported by Rajnarain Bose who was also among the first nationalist leaders to encourage the use of indigenous cloth and other articles to the exclusion of foreign products.⁵⁹ Bengali journals played a vital role in championing the cause of *Swadeshi* among common people. *Grāmbarta Prakāshikā* appealed:

"Foreign clothes are cheaper than Indian clothes. So people buy foreign made clothes. But if we think logically, our clothes are more durable than those. So in long run Indian clothes are more useful. Due to the development of the textile industry, Europeans produce cheaper machine made clothes. If our countrymen would try to develop textile industry in India, then we can defeat Manchester. But it will take time. We are requesting our countrymen to kindly consider the miserable condition of the people attached to handicrafts and for the sake of these people buy Indian clothes."⁶⁰

Some articles which appeared in these journals were very encouraging. *Bhārati*, run entirely by the Tagore family, was optimistic in emphasizing the role of indigenous enterprise:

“In spite of loss of sovereignty, that the Bengali people have not lost their determination is really a good sign. They are learning agriculture in Scotland, achieving distinct positions in England in various branches of science, studying the principles of mathematics, getting professorship at Russian university, fighting to unite India politically, denying obeying the social taboos and raising their voices against the misrule of the government.

It is not far away that Bengali youth would learn marine science, mechanical engineering, etc. There is very limited scope in the government jobs. So in near future they would go abroad to acquire technical education and business skills. Gradually they would become interested in trade and business.

We are very hopeful that independent business enterprise would flourish in Bengal. If the government does not create an adverse environment, then our trade and business would definitely shine. The people of the other parts of India are very much interested in business. They are facing many adversities due to absence of proper education. But educated and intelligent Bengalis would definitely overcome these obstacles and earn immense wealth through trade and industry. So these two are the most important catalysts for the development of our country.”⁶¹

The employment creating potential of industrialization formed a major theme of *Swadeshi* propaganda. Many started believing that a faulty system of education combined with lack of industrial development had led to the services and the professions being overcrowded. In the latter half of nineteenth century few Bengalis with great entrepreneurial abilities, started their own business ventures. Hemendramohan Bose, Kishori Mohan Bagchi, etc. were ideal examples of this period.

Hemendramohan Bose, better known as H. Bose, was the first commercially successful perfumer of India. *Kuntalin*, a hair oil, the perfume *Deelkhos*, many kinds of fruit syrups, and hair wash-all of his products won a big market. *Tāmbulin* in a way was years ahead of the present day *Pān-parag* class.⁶² In promoting consumer products, Bose was the first Indian to exploit the art of advertisement.⁶³ He employed an Indian artist named P. C. Ghosh who was the first to depict Indian women to illustrate the advertisements. The copy-writing was done by Bose himself. In fact, it is

the large body of Bose's advertisements which constitutes the source material for recording and interpreting his entrepreneurship. One such example-

“For the hair you have *Kuntalin*
For chewing betel take *Tambulin*
In the handkerchief use *Deelkhos*
Thanks says H. Bose”⁶⁴

Bose was choosy about selecting avenues to promote his wares. He preferred *The Bengalee* and *Amrita Bāzār Patrikā* under Indian ownership, to *The Statesman* which was the leading newspaper of the day.

Hemendramohan was also the first to turn out indigenous voice recordings on a commercial scale in India. He founded the phonographic business in 1905. ‘The Talking Machine Hall’, as it was named, was situated in Marble House at 41, Dharmatala Street. In early 1906, at the peak of the anti-partition agitation in Bengal, the first batch of phonographic records, so called cylinder records were offered for sale.⁶⁵ Labeled as H. Bose's Records, all of them were of patriotic songs and sung by Rabindranath Tagore, Dwijendralal Roy, etc. In the domain of the history of technology, Bose will be well remembered for his endeavour to produce sound-recordings. He was awarded a gold medal at the Industrial Exhibition of Calcutta, 1905-06, for these on the recommendation of Prof. J. C. Bose, the judge.⁶⁶ With the advent of the disc record, H. Bose felt the need to switch from the cumbersome cylinders. He got into a partnership with the famous French firm of *Pathe* and got many of his cylinders transferred into discs bearing the label, *Pathe-H. Bose's Record*. One such record, containing the recitation of ‘*Sonār Tarī*’ on one side and the song ‘*Bande Mātaram*’ on the other is the oldest existing voice recording of Rabindranath.⁶³

Another prominent entrepreneur of late nineteenth century was Kishori Mohan Bagchi. He set up ‘P. M. Bagchi & Co.’ in a rented house in north Calcutta in 1883. It was initially called ‘Durjeepara Chemical Works’, then renamed ‘Durjeepara Chemicals and Rubber Stamp Works’. After three years it was known as ‘P. M. Bagchi & Co.’⁶⁸ Its first product was ink. Advertisements declared: “Aniline ink was first invented in Germany in 1879, after four years in 1883 it was manufactured in the Eastern world by P.M.B.”⁶⁹ They manufactured different types of ink, which required not only individual initiative but also sufficient knowledge of chemistry.

The principle of self-reliance adopted by the firm was reflected not only in the purchase of raw-materials for ink, but also in other essential goods, e.g., dyes, pots, bottles of different sizes, tin-boxes etc. In the last quarter of the nineteenth century a large number of *Swadeshi* companies manufacturing glass articles sprang up in many areas of Calcutta: the Indian Glass Works Ltd., Calcutta Glass Works, Bengal Glass Works, etc.⁷⁰ The Indian Glass Works was such a *Swadeshi* company which supplied glass articles to P.M.B.

কলিকাতা, বেনারস, খুলনা প্রভৃতি স্থানের ইণ্ডিয়ান একজিবি
নু হইতে ৮ খানি গোল্ড মেডেল প্রাপ্ত ও সর্বজন সমাদৃত ও
সংশ্লিষ্ট।

**পি, এম, বাক্চী এণ্ড কোম্পানীর
এসেন্স প্যারফিউমারী।**

সদ্য প্রস্তুত পুস্পের সারাংশ অভিনব উপায়ে বাহির করিয়া
এই সকল উপাদেয় এসেন্স প্রস্তুত হইয়াছে। সৌরভ দীর্ঘকাল
স্থায়ী, এককোটা রুমাতে দিলে সৌরভে মনপ্রাণ বিমোহিত হয়।

১। কাশ্মীরকুহুম—হৃৎবর্গ কাশ্মীর পুস্পের জন্ম চিরপ্রসিদ্ধ
তাই কাশ্মীরে চিরবসন্ত, তদ্দেশীয় সর্বোৎকৃষ্ট ও হুমিট পুস্পের
সারা ইহা প্রস্তুত। মূল্য ৫০ বার আনা মাত্র।

২। খুলনা আমায়—(Forget me not.) ইহার গন্ধ হুমিট ও
বহুদিন স্থায়ী। মূল্য ২০ দুইটাকা।

৩। মনের মতন। (As you like it.) এমন প্রাণ মতোয়ারা
সর্বজন বাঞ্ছিত হুমিট গন্ধ আর নাই। মূল্য ১০ পঁচসিকা।

৪। জেসমিন—সদ্য প্রস্তুত জুইফুলের গন্ধ অতিশয় হুমিট ও
বহু দিন স্থায়ী। ইহা অতিশয় তৃপ্তিজনক। মূল্য ১০ আনা।

৫। রজনীগন্ধা—এরূপ হুমিট ও
তৃপ্তিজনক গন্ধ আর নাই। সদ্য প্রস্তুত
“রজনীগন্ধার” স্থায় গন্ধ অথচ বহুদিন
স্থায়ী মূল্য ৫০ বার আনা।

৬। গন্ধরাজ—পুস্পের রাজা বলিয়াই
ইহার নাম গন্ধরাজ সদ্য প্রস্তুত গন্ধ-
রাজ পুস্পের তৃপ্তিকর সৌরভ চিরদিন
স্থায়ী। মূল্য বার আনা মাত্র।

৭। ববুল—এরূপ হুমিট ও দীর্ঘকাল
স্থায়ী অথচ হৃৎমানন্দকারী প্রাণ মতো-
য়ারা গন্ধ আর নাই বলিলেও অত্যাতি
হয় না। মূল্য বড় লিপি গ্রাস্ উপার ৫০
কর্ক উপার ১০/০ ছোট ১০/০ আনা।

প্রিণ্টের ভিত্তি অধিক হওয়ার আমাদের প্রত্যেক এসেন্সের উক্ত নির্দিষ্ট মূল্যের
স্বয়ং ১/০ এক আনা অধিক বৃদ্ধি হইয়াছে।

কারখানা—৩৮, ৩৮।১নং মসজিদবাড়ী স্ট্রীট দক্ষিণাড়া কলিকাতা।




Fig. 2: An Advertisement of P.M. Bagchi & Co [Prabasi, Vol. 8, No. 6, 1317 B.S. (1910)]: Proprietor Kishori Mohan Bagchi, a prominent entrepreneur of late nineteenth century Bengal, pursued a policy of self-reliance in the technological field and took particular care to promote research relating to *Swadeshi* industries.

Essence and perfumery constituted the second major branch of the firm. Another major department was the Rubber Stamp Department. Of the technological fields in which they excelled, the manufacture of wooden blocks was one. The need for wooden blocks arose out of demands from the press. Wooden blocks were necessary for printing pictures in books and

advertisements. These needed skilled artisans, settled in the Garanhata and Battala areas of north Calcutta. Their artistic skill and knowledge of printing was commendable and they brought line and half-tone-effects to books and advertisements. P.M.B. is the only firm that produced such a wide variety of goods. It could be combine almanac and publication with ink, perfumes, type foundry, rubber stamp, first syrups and medicines.⁷¹ P.M.B. did not simply manufacture different commodities by mainly relying on indigenous sources; it also pursued a policy of self-reliance in the technological field, despite limitations. The small and middle Bengali entrepreneurs, like Kishori Mohan Bagchi and his firm, took particular care to promote research relating to *Swadeshi* industries.

Among modern industries, the first and in many ways the most remarkable of all was the Bengal Chemical and Pharmaceutical Works (BCPW), founded by the great scientist and patriot Prafulla Chandra Ray in 1892.⁷² Drugs produced from indigenous materials included ayurvedic items as well as standard British pharmacopoeia preparations. Patriotic minded distributors like Buttokristo Paul and doctors like Radhagobinda Kar and Nilratan Sircar helped popularize the drugs and acids manufactured by BCPW. The manufacture of laboratory apparatus and perfumes was also taken in hand. The BCPW did not use imported machinery; all the machines were designed and constructed in the workshop of the firm. In 1908 Cumming observed the enterprise as “an object lesson to capitalists in this province.”⁷³

Ray endeavoured to make his science directly relevant to the immediate needs of his society. The enterprise BCPW, sought to put scientific and technological knowledge to immediate industrial use, to encourage the idea of self-sufficiency, and to provide employment to many Bengali youths. As a modern scientist, Ray appreciated and tapped the advantages of industrialization and believed technical education was of great importance considering the stunted industrial development of India.

Perhaps the last initiative by Bengali entrepreneurs in the nineteenth century was the formation of the Bengal Providential Railway Company. On the recommendation of the Famine Commission (1881), the railway line between Howrah and Tarakeswar was established in 1885. The local *zamindārs* played a vital role in that venture. The motive behind their move was to connect the area with the market of Calcutta to strengthen the local

3

THE AMRITA B

BENGAL CHEMICAL & PHARMACEUTICAL WORKS.

51 Upper Circular Road, Calcutta.
Consulting Chemist and Analyst.—P. C. Ray, B.Sc. (Edin).
Consulting Medical Adviser.—Dr. Anulya Charan Basu, M. B.

Raja R. R. Kapur, Manager, Raj Burdwan, Palace Burdwan, says—The medicines and other articles supplied by you for the Raj Hospital at Burdwan, have all been received in good condition and are of very good quality; and the changes made deserve the medical officer in charge of the Hospital a high opinion upon the medicines.

Dr. R. I. Dutta, Surgeon-Lt.-Col., Professor of Materia Medica, Medical College, Calcutta, says—The last was of good quality as it acted in a certain number of cases of Diabetes with marked good results. In two of my cases of acute Diabetes it reduced the quantity of sugar and urine almost to the normal in a week. I should always be glad to encourage you in your attempts to establish as a Pharmaceutical Chemist and I hope our medical friends will give their support.

Dr. B. K. Das, M. B., Surgeon-Captain, I. M. S., Calcutta, says—I have very great pleasure in bearing testimony to the excellence of your Pharmaceutical preparations and I feel no hesitation in commending them to the general public on account of their freshness. I am glad to observe that you make no secret of the formulae of your Special Preparations.

Dr. K. G. Kar, L. R. C. S., (Edin.), Calcutta, says—I have been regularly using your preparations and I find that they are much better than those ordinarily to be had in the market. They have besides this advantage that being fresh they are likely to be more efficacious.

Dr. Nilratan Sircar, M.A., M.D., Calcutta, says—I have been prescribing your Syr. Hypophosph. Co. for the last six months and found them in no way inferior to similar preparations by English Manufacturers. You are doing a real service to the country by publishing the formulae of your medicines. I sincerely trust your endeavours to promote the manufacture of medicines from indigenous drugs in a thoroughly scientific way will be appreciated by the Medical Profession.

Dr. Mohendranath Gupta, M. B., Chief Medical Officer, Raj Burdwan, says—I have given a fair trial to medicines prepared by the Bengal Chemical and Pharmaceutical Works, and I am glad to say they proved efficacious in their actions. They are in no way inferior to those that are manufactured in Europe.

Dr. Jogendra Nath Biswas, Asst. Surgeon, Jhelum, says—I have been using the Special Preparations of the Bengal Chemical and Pharmaceutical Works since last year, and I am glad to say I prefer them owing to their freshness and have much pleasure in recommending them to the general public.

Dr. Balha Panna Ghose, M. F. Kanigan, says—I have been using your indigenous and special preparations in many cases and I generally find them efficacious. I sincerely wish your enterprise and effort the success that they deserve and hope you will keep me informed of any new preparation that may be made in your firm.

S. C. ROSE

BENGAL CHEMICAL & PHARMACEUTICAL WORKS

Fig. 3: An advertisement of the Bengal Chemical & Pharmaceutical Works; eminent physicians of the day, Dr. R. G. Kar, Dr. Nilratan Sircar among others praised the pharmaceutical preparations of the firm (*The Amrita Bāzār Patrikā*, July 19, 1897)

economy. One alumnus of the Thomson Engineering College, Roorkee, Anadaprasad Roy with the help of Amritlal Roy, editor of the English journal *Hope*, prepared a plan to establish a railway connection between Tarakeswar and Mogra on *Swadeshi* line.⁷⁴ With the help of local *zamindārs* and wealthy persons the Bengal Providential Railway Company was established in 1889. *Sambād Prabhākar* reported:

“We have been listening for long about the opening of railway communication between Tarakeswar and Mogra. Lastly we have come to know from the Calcutta Gazette that Raja Pari Mohan Bandothyay, Babu Nandalal Goswami, Babu Chandicharan Sinha, Moulobi Ahmed Box, Babu Ananda Prasad Roy, Babu Sri Ramchandra Basu and Babu Amritlal Roy took the initiative to establish the railway line. They were waiting for permission from the Bengal government. On January 13 the government gave the necessary permission to go ahead with the plan.

They established a joint-stock company to raise money for the project. The name of the company is 'Bengal Providential Railway Company Ltd.' The line will start from Tarakeswar and after touching Gopinagar, Dasghara, Bonpur, Dhanekhali, Majinan, Gopalpur, Melki, Dwarbasini, Mahanad, Sultan Gacha; will reach Mogra. Two bridges of 40 feet length have to be built near Dasghara and Bonpur. The speed of the train on the proposed line would be 12 miles per hour. So it would take two and half hours from Tarakeswar to Mogra.⁷⁵

In the primary stage Anadaprasad was the chief engineer and later Dhanakrishna Basu took over charge. The first railway line built entirely on Indian initiative began running on 2 April 1895.⁷⁶ The Bengal Providential Railway Company was a true example of *Swadeshi* capital and management.

Thus we have seen there was a positive effort in Bengal by the end of the nineteenth century. Many indigenous enterprises came up during that period, but few of these were really successful. Examples of H. Bose, P. M. Bagchi & Co., the *zamindārs* of rural Bengal to establish railway communication and above all Prafulla Chandra Ray proved that there was no dearth of entrepreneurial abilities among the Bengali people at the turn of the nineteenth century.

CONCLUSION

One of the important factors hampering the growth of industry in Bengal was the dearth of adequately trained technicians. Consequently, one of the important and oft-repeated demands of the Bengali leadership was for new technical schools, colleges, and institutes in order to spread technical knowledge far and wide.⁷⁷

The Bengali intellectuals pointed out that one of the reasons why youth did not show enthusiasm for technical education was the lack of employment opportunities, because of the industrial backwardness of the country. The government was urged to encourage recipients of technical education by providing them with jobs, and in particular to throw open to Indians the higher posts in the PWD, telegraph department, and railways. Lack of technical education had been used as a justification for the exclusion of Indians from responsible posts in industry and government through the nineteenth century. While stressing the responsibility of the government, the

Bengali leadership laid a great deal of emphasis on self-help. Prafulla Chandra Ray was inspired by the close coordination of the West between industry and science to enrich each other and started the Bengal Chemical & Pharmaceutical Works to achieve the same.

The nature of technical education to be imparted in the technical institutions also drew the attention of Bengali leaders.⁷⁸ They took strong exception to, and trenchantly criticized the official policy of confining technical education mostly to the improvement of the style of work of carpenters, smiths and other handicraftsmen. They pointed out that Bengal already had enough trained artisans. What the province needed were modern engineers. The main goal of technical education had to be not the revival of the extinct and dying industries but the establishment of new large-scale industries which would produce goods which were at that moment being imported. So the Bengali intellectuals vigorously pressed for the opening of high level institutions where the most advanced technical education would be provided. Pramatha Nath Bose, a noted geologist and science-enthusiast, rightly observed:

“Yes, technical education is very badly needed in this country. But what kind of technical education is it that we want? Technical education may be briefly defined to be a training for industries. In order to settle what kind of technical education is specially wanted, we must find out what industries are capable of special development. Now industries may be grouped under two heads- (1) Art-Industries, such as carpentry, shoe-making, engraving, etc, that is to say, industries which have a very remote, if any, connection with science. (2) Science-Industries, industries more or less dependent upon some branch or other of natural science, such as mining, glass-manufacturing, cotton-manufacturing, &c. From what I have already said, it will be apparent that it is the science and not the art industries that require to be specially developed.”⁷⁹

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NOTES AND REFERENCES

1. *Jñānāneshan* was the mouthpiece of the Young Bengal. This weekly journal appeared in 18th June 1831 and Dakkhinaranjan Mukhopadhyay was the editor. The journal found a model Bengali entrepreneur in the enterprising Dwarakanath Tagore who started his own commercial house in full partnership with Englishmen.
2. P. C. Ray strongly held that the Bengalis should cease to take clerical jobs and turn to business and industry – *Acharya Prafulla Ray Birth Centenary Volume*, Calcutta University, Calcutta, 1962, p. 299.
3. Recent researches have shown the material development and pursuit of science, technology and business were systematically ignored in western treatises on the subject. India's commercial and industrial heritage was ignored and even suppressed to keep the industrial domination of Europe. See C. Palit and P. K. Bhattacharya (eds.), *Business History of India*, Kalpaz, Delhi, 2006.
4. 'Engraji Muldhon Biniyoge Bhārater Upokār Kī?' *Somprakāsh*, 18 Baishāk 1290 (April, 1883).
5. *Sambād Prabhākar*, 22 July 1847.
6. Gadgil, chapters III and XII.
7. See S. G. Deuskar, *Deshar Katha*, Calcutta, 1904.
8. Palit, 2006, p. 49.
9. *Samāchār Darpaṇ*, 21 April, 1838.
10. The *modus operandi* of an agency house is described thus by R. M. Martin in 1832: 'A large mercantile house is established at Calcutta, with a branch in London; the partnership formed of various individuals—one a retired civil servant of the Company—another a military man—a third a doctor and fourth a London merchant. They possess no real capital, but establish an agency and banking business, receive as deposits the accumulating fortunes of the East India Company's servants and trade on these deposits'. Quoted in R. K. Ray (ed.), 'Introduction', in *Entrepreneurship and Industry in India, 1800-1947*, Oxford University Press, Delhi, 1992, p. 19.
11. B. B. Kling, *Partner in Empire: Dwarkanath Tagore and the Age of Enterprise in Eastern India*, University of California Press, Berkeley, 1976, pp. 55-56.
12. A *banian* is a person by whom all purchases and all sales of goods, merchandize and produce are made and through whom all shipments are made on account and on behalf of the merchants or mercantile firm in whose establishment he is a *banian*. See Sinha, 1967, 121-148.
13. C. Palit, 'Bengali Business Enterprise and the BNCCI', in C. Palit and P. K. Bhattacharya (eds.), *op.cit*, pp. 252-3.
14. Mitra, 1870.

15. *Samāchār Darpaṇ*, 4 October, 1834.
16. *Samāchār Darpaṇ*, 18 April, 1835.
17. This celebrated Parsee had the unique credit of being the first Indian to challenge European monopolies in the fields of insurance and banking. Rustomji, Turner & Co. was his singular attempt at a joint stock company with foreign collaboration (1827). He owned a fleet of 40 ships which sailed regularly to the Far East, Australia and Southern Coast of India. In 1837 he started a Docking Company and bought up Kidderpore and Salkia Docks. Many ships were built here. He had the far sight to plan a regular steamer service in the rivers of Bengal. For the purpose, the Indian General Steam Navigation Company (1844) was founded, of which Rustomji was the only director. He launched the Bengal Salt Company in Sunderban area. C. Palit, 'Indigenous Business Enterprise in Bengal: 1780-1880', op. cit.
18. *Samāchār Chandrikā*, 9 February, 1833.
19. *Reformer*, 18 March, 1833. This was published by Prasanna Kumar Tagore and representing views close to those of Dwarkanath.
20. *Jñānāneshan*, 14 December, 1833.
21. *Jñānāneshan*, 9 August, 1834.
22. *Samāchār Darpaṇ*, 9 January, 1836.
23. For more information see, B. B. Kling, *Partner of Empire*, op. cit., pp. 94-155.
24. *Samāchār Darpaṇ*, 1 July, 1835.
25. Chakrabarty, 1974, pp. 107-11.
26. *Samāchār Chandrikā*, 22 September, 1845: 'We came to know from Englishmen that Babu Dwarkanath Tagore, now at London, has agreed to help the Company which was formed to establish a railway-line in the north-western part of Bengal.'
27. Mitra, 1869, p. 41.
28. Capper, 1853, pp. 381-2.
29. Stocqueler, 1845, p. 348.
30. Ray, 1992, p. 24.
31. *Sambād Prabhākar*, 4 April, 1848, reported the sad demise of Carr, Tagore & Co.
32. Headrick, 1988.
33. Ghose, 1968, pp. 110-113.
34. Kling, pp. 251-3.
35. Gadgil, 1959, pp. 18-9.

36. Ghosh, 1868, pp. 57-8.
37. Kling, 1969, p. 25.
38. Sinha, 'Indian Business Enterprise: Its failure in Calcutta (1800-1848)', op. cit.
39. *Jnānāneshan*, 14 December, 1833.
40. *Sambād Prabhākar*, 22 June, 1847. Tarini Charan wrote, "...if we were courageous and laborious like the Englishmen, then nobody could snatch the wealth of our country. England becomes the richest country of the world by utilizing the wealth of our country. They collect the raw materials from India and convert them in various finished products in their industries. Then we are compelled to buy these goods in a higher price. If our countrymen become interested in technical education like the British and start their own industrial enterprise, the misery of our country would certainly come to an end."
41. *Sambād Prabhākar*, 22 June, 1847.
42. *Sambād Prabhākar*, 23 November, 1853.
43. *Sambād Pūrṇochandrodaya*, 1 February, 1853.
44. *Sambād Prabhākar*, 17 August, 1854.
45. *Somprakāsh*, 13 July, 1863.
46. *Tattobodhini Patrikā* 321, 1870, in B. Ghose (ed.), *Samayik Patre Banglar Samajchitra*, Vol. 2, Calcutta: Bengal Publishers Pvt. Ltd, 1963, p. 250.
47. Ibid.
48. *Amrita Bāzār Patrikā*, 6 January, 1869. The title of the article is very interesting- 'Chakuri Kukuri'.
49. *Somprakāsh*, 6 August, 1883.
50. *Somprakāsh*, 23 March, 1886.
51. *Sādhārani*, 28 December, 1873.
52. *Sādhārani*, 21 June, 1874.
53. *Sādhārani*, 5 September, 1875.
54. Sen, 1977, p. 95.
55. Bhattacharya, January 1965, pp. 1-22.
56. Sarkar, 1973, p. 94.
57. "About this time (1891-92) another matter began seriously to occupy my thoughts...the adventurous non-Bengalis, notably the Marwaris from the barren deserts of Rajputana, were swarming not only in Calcutta but also in the interior of Bengal and capturing all key-points of the export and import business...", 1932, pp. 89-90.

58. Bhattacharya, 2005, pp. 90-110.
59. Chandra, 1966, p. 64.
60. *Grāmbarta Prakāshikā*, 22 July, 1876.
61. *Bhārati*, I, (Magh, 1284), January 1877.
62. Ghosh, 1988, p. 195.
63. The small and medium swadeshi entrepreneurs used advertisements as one of the mediums of propaganda among people through journals, almanacs, propaganda literature, hand-bills etc. These ads became one of the major sources of information on the industrial development of Bengal along swadeshi lines. For more information see A. Bhattacharya, 'Swadeshi industries in colonial Bengal: Advertisement as a source of information', in *Business, Politics & Technology*, op. cit., pp. 30-51.
64. Quoted in S. Ghosh, op. cit., p. 199.
65. *Amrita Bāzār Patrikā*, 19 March, 1906.
66. *Indian Industrial Exhibition* (a hand book), Calcutta, 1906.
67. Ghosh, The Asiatic Society, 2001, p. 175.
68. Bhattacharya, A. (ed.), 1983, p. 9.
69. Quoted in Bhattacharya, A., 1998, p. 111.
70. Bhattacharya, A., 1986-87, pp. 70-73.
71. P.M.B.'s policy of self-reliance was manifested also in the Medicine department. It had two branches: one, Kabiraji Siddhasram (ayurvedic section) and the other was the allopathic section. The first was set up in 1907 and the second was in 1941. The allopathic department was significant for original research and invention. The company manufactured a number of patent medicines for the treatment of various diseases like fever, dysentery, colitis, etc.
72. 'Our educated young men, the moment they came out of their colleges, were on the look out for a situation or a soft job under the Government..., or failing that in a European mercantile firm. The professions were becoming overcrowded. A few came out of Engineering College, but they too were helpless seekers after jobs...What to do with all these young men?...How to bring bread to the mouths of the ill-fed, famished young men of the middle classes?' Thus Ray explains the motives behind his setting-up of BCPW. P. C. Ray, op. cit., pp. 89-92.
73. Cumming, 1908, p. 31.
74. Sen, S., 2003, p. 423.
75. *Sambād Prabhākar*, 25 January, 1892.
76. *Sahāchār*, 3 April, 1895.
77. Palit, 2004, pp. 91-140.

78. Dinanath Sen, the Head Master of Dacca Normal School, prepared a proposal for the school of industry or practical science in 1876. He vividly described the necessity for such an institution, its objectives, mode of instruction in it. He identified, 'the high pay necessary for employing European engineers or superintendents, the cost and risk of importing European made machinery, the difficulty of having machines, when out of order, cheaply and expeditiously repaired on the spot' for the backwardness of India in industrial sector. Dinanath's prescription was to create a local class of well-trained mechanical engineers which would give impetus to the introduction of scientific methods in manufacturing industry. He was interested in mechanical engineering, as for civil engineering there was already Bengal Engineering College. Although he was approached by the India League and DPI, but his proposal remained unheeded. D. Sen, *A Scheme for the School of Industry or Practical Science Proposed to be Established in Calcutta*, Calcutta: Minerva Press, 1876.
79. Bose, 1906, p.11.

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