

Indigo Plantations and Science in Colonial India

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Indigo plantation in India came under scholarly examination initially in the context of colonial oppression and the indigenous protest against it, as a part of the history of freedom struggle. Over the years, it has become an aspect of economic history and of the history of the peasant movement. In the 1990s, Deepak Kumar briefly touched upon its scientific component in his *Science and the Raj 1857-1905*.⁽¹⁾ Subsequently, Prakash Kumar took up the subject, taking a deeper interest in its scientific aspects, which has culminated finally in the present work, *Indigo Plantations and Science in Colonial India*. This is the first fully-fledged independent work on the subject concerning India.

The introduction to the book begins with an engaging story of indigo plantation in South Asia and the world, touching upon the various aspects of historical research on the subject and its conceptual underpinnings. In chapter one, the author introduces the reader to the world of indigo plantation with a focus on the diaspora. Starting with the Caribbean indigo, he visits the indigo industry in Saint Domingue, Guatemala and Carolina before he turns to Bengal in India – the main location of his study. In this detour, he gathers valuable information on the scientific aspects of indigo cultivation and dye making, and the international trading that influenced the indigo industry in India as well.

Chapter two, ‘The course of colonial modernity’, starts with a glance at the politico-economic aspect of indigo cultivation in the emerging British colony in Bengal. It examines in detail the landscape, land rights and the need for improvement in the province, especially its Tirhut region, in the context of white planters’

initiatives to promote indigo cultivation. To understand the problems, developments in Bengal are compared with those in the Doab and other parts of the country. However, what is of greater importance here is the author's effort to relate developments in indigo cultivation in India to advances in agricultural chemistry in Europe, and particularly in France and Britain. The scientific discoveries and experiments concerning the different indigo varieties abroad very much encouraged the new initiatives to promote the indigo industry in India. It is demonstrated how the new findings about the plant and its industrial processing in Europe influenced the industry in India. Chapter three deals with the commercial and marketing aspects of the industry in the country.

Chapter four recounts the establishment of agricultural institutions at many places in north India, such as Pusa, Dholi, Sabour, Dalsingserai, Peeprah in Bihar, and Dhasana near Delhi. The chapter is, however, problematic in its nomenclature and content. The use of the phrase 'Local science' is somewhat confusing – this normally connotes indigenous science, but it is not used in that sense here. Likewise, as to the second part of the chapter heading – 'agricultural institutions in the Age of Nationalism' – Kumar talks very little about nationalism while writing about the establishment of agricultural institutions. It may be noted that nationalism was fast emerging in north India around this time, especially around Pusa where the first major Imperial Agricultural Institute was founded in 1905. As such the projected points of focus of the chapter remain largely ambiguous and unconnected.

Meanwhile, the discovery of synthetic indigo by 1897 in Germany had come as a great challenge to the existence of the natural indigo industry. Chapter five gives an account of its dwindling prospects and of the efforts made to harness science to save it from the competition. In the circumstances, Mendelian biological selection seemed to offer some hope to the Indian planters. Therefore, efforts were made at newly created research centres to find out the best variety of indigo plant to enhance production to meet the challenges from the ever rising synthetic dye. The involvement of analytical chemists with the indigo trade was a new development that started around this time. It concentrated on the colour content and the nature of the dye. However, personal rivalries between the chemists themselves soon surfaced. Two of them, W. P. Bloxam and Cyril Bergtheil, started arguing against each other's interpretation of colour tests at the meeting of the Society of Chemical Industry in Manchester and London. Differences arose also between the scientists in the metropolis and the planters in India. The latter resisted metropolitan scientific advice in view of their actual experiences and perceptions on the ground in India. Floods, hostile climatic conditions, and plant diseases further doomed the prospects of harnessing science and rationalising the industry, as synthetic indigo surged ahead in the international market.

Not long after, the First World War generated a fresh wave of metropolitan interest in reviving the colonial natural indigo industry. Disruption in the supply of synthetic dye from Germany during the war created a new demand in the markets in Britain and elsewhere among the allied nations. Wartime sentiment in England further generated political support for a 'product of the Empire'. In these conditions of changed political economy, the supporters of natural indigo found an opportunity, with governments both in Britain and India, along with many others, including the planters and traders, becoming interested in promoting it. Various measures were initiated to boost the industry at all levels – plantation, processing, and trading. An important conference was held in Delhi in 1915 and the problems of the industry were discussed. Emphasis was placed on standardising the product, and an effort was made to establish a lasting paradigm for indigo improvement. However, most dyers and printers considered natural indigo to be an inferior dye compared to synthetic. A follow-up conference was organised in London, and appeals were made to improve the natural dye industry. But nothing could avert its doom.

In this study, Kumar has identified three landmarks in the history of indigo in the British Empire: first, the global dispersal of knowledge about indigo that started with an early text authored by Jean-Baptiste Labat, the famous 17th-century French naturalist. Written in the beginning of the era of indigo plantation, the text was translated into English and other major European languages and became an important medium in the global movement of indigo-manufacturing knowledge from the Caribbean, especially the indigo-growing region of the French Empire to the British Empire. Labat was born in 1663 in Paris and was respected for his learning. He earned a reputation abroad as a preacher, as a successful colonialist, and later as a writer and

naturalist. His was the first detailed account of the cultivation and manufacturing of indigo to be widely disseminated at a time when indigo production was spreading worldwide. Other French expositions on indigo by writers and planters, like Elias Monnerue of Saint Domingue, and De Cossigny de Palma of Mauritius, similarly made it to the wider world including colonial South Asia. The history of indigo manufacturing in colonial South Asia cannot be complete without a consideration of these larger knowledge networks, Kumar believes.

The second landmark was the discovery of synthetic dye in Germany and its commercial launch in the market in 1897. This instantly introduced commotion in the natural indigo business and generated debate at various levels. The debate surrounding natural vs. synthetic is presented in detail in the book, with various nuances brought out, in terms both of a clash of business interests and the question of the worth and utility of the two substances, notwithstanding elements of international diplomacy.

The third landmark was the First World War, which impacted significantly the development of indigo industry in India. It brought the on-going debate – natural vs. synthetic – into a far wider perspective of war, international diplomacy, and trade. However, the author's indifference to the broader realities of life, politics and society in the country leaves the narrative incomplete. It may be recalled that around this time nationalism was fast emerging in the whole of north India, the main area of indigo plantation. Revolutionary nationalist Khudiram Bose bombed and killed a white British family in 1908 at Muzaffarpur, then a major centre of assemblage of white planters in the country. Such revolutionary activities in the region continued until Independence. Moreover, through the Swadeshi Movement numerous indigenous efforts were made to promote agriculture on modern lines in the country. Rabindranath Tagore experimented in his farm at Santiniketan at Bolepur, and a Swadeshi farm was established near Deoghar, now in Jharkhand. A look at these developments could have given insights into both indigo plantation practices, and nationalism in the country.

The author overlooks the response of the nationalist bodies like the Indian National Congress, and of the common masses who provided the labour force for the indigo industry. Unfortunately, the history of the masses is yet to be written properly. In that, proceedings of the the local popular organisations, particularly in Bengal, may give us useful information, or else, information may be hidden in obscure places, as in the crime files of the local administration and in the diaries of the planters themselves. Curiously enough, the author touches upon the aspect of nationalism only in the conclusion in the end of the book and then only very briefly. It is worth remembering that Gandhi's movement for freedom, the most potent and conclusive phase of the freedom struggle in India, started in 1917 as a consequence of the problems created by indigo plantation in Champaran in Bihar. The author's neglect of this is ironic, as he has studied meticulously many of the indigo-producing establishments located in Champaran and the surrounding areas. There are several works on the socio-economic aspects of these establishments in Champaran and elsewhere in the country, with harrowing narratives of the excesses and exploitation of the poor ryots by the white planters, and some of them are included in the bibliography of this book.

In the course of his discussion of 'colonial modernity,' the author touches in chapter two upon the critique of colonial rule advanced by Eugen Schrottky. Schrottky, drawing from Justus von Liebig's ideas, criticised not only the Indian rulers but also the colonial rulers of India for neglecting agriculture in the country, and pleaded for its rationalisation in consonance with increases in scientific understanding. He later joined the issue with Dada Bhai Naoroji, who produced one of the earliest and greatest critiques of British economic policy (pp. 118–21). Kumar also details the case of John Augustus Voelcker, the noted agricultural scientist who visited India on the invitation of the colonial government during 1889–91, and subsequently submitted his famous *Report on the Improvement of Indian Agriculture* (1893). Citing this report, Kumar shows how Voelcker defended the colonial authorities over the issue of the neglect of agriculture in India, and how he refrained from addressing the political aspects of the indigo industry involving the socioeconomic and political relations between planters, ryots, and zamindars. Not only that but decades later, 'after the popular revolts against the indigo system in Bengal, and simmering discontent against its violence among the indigo peasantry in Bihar', he praised the planters for their good practice in promoting indigo cultivation in the area (pp. 126–7). But what is the author's own view on the planters' oppression and its consequences for the local

population?

Likewise, the author's comparative silence on traditional indigenous practices in indigo cultivation in India is intriguing. There are credible references to indigo cultivation and its use in pre-colonial India (2) which the author himself refers to in the book (pp. 59–60, 62–7). But it is baffling that he does not go into its history in greater detail and show whether white planters made use of indigenous knowledge for their own operations. If not, then why? Did hostility between the planters and the local people hinder any interaction and free flow of ideas and information between the two? Or, were there other reasons?

I also have concerns about the use of certain phrases in the book: for example, cannot 'indigo science' (pp. 201, 208, 252, 277) be considered as 'plant science' or 'agricultural science' rather than requiring separate categorisation? The author's description of the different manufacturing processes is valuable, but again not necessarily sufficient to merit a whole new term. In addition, many of the descriptions of the experiments and field studies appear to be overstretched. Are not most of them concerned with technology, rather than science? 'Indigo culture' (p. 33, 90–9) and 'indigo system' (p. 53, 300) sound good, likewise; but will they be able to deliver the desired meaning once taken out of their present context? These phrases jar in the midst of an otherwise very clear and free-flowing narrative.

The real problem arises when the author insulates the subject from contemporary social realities. As indicated earlier, most past works on indigo reflect a background of exploitation of the Indians. Even the technicalities of pure science – be it connected with indigo or something else – have socio-cultural connections. This has been demonstrated again and again since J. D. Bernal and others reflected on the social relations of science in the 1930s. Overlooking this is sure to raise many eyebrows. Curiously, the author takes up the question of nationalism in chapter four, but very soon drops it without any obvious justification.

We may recall that the lease of vast fertile lands to the white indigo planters paved the way for the entrenchment of the colonisers in remote areas of the country, creating a base and support system for the consolidation of the colonial rule in the country. Moreover, the most fertile lands were brought under indigo cultivation, with hardly any good land left for the cultivation of staple cereals and crops for local needs. This led to serious shortfalls in food production, and caused malnutrition and the pauperisation of the peasantry involved. Professional organisations had already created a support system for the indigo planters; official support to them in matters of land lease and management, official favours, and police protection encouraged them to indulge in all types of extortion and oppression of the masses. The planters imposed bizarre taxes and obligations on the peasants. The latter had to pay for the festive parties of the *Gora Saheb*, for his new coach (or car later), and for the family festivities. Already impoverished by floods and famines, the peasantry was pushed down to still lower economic levels, with a subsequent adverse impact on the social structure and the professions. In several cases, the attitude of the planters was very hostile and harsh. There are stories of extreme atrocities perpetrated by them on the local population. On the planters' side, too, there are sad stories of loneliness, problems arising out of the conditions of the tropics (heat, dust and perspiration, insect bites, endemics and epidemics), and domestic violence leading to suicides by the wives of the planters.

These are a few issues the author may perhaps like to address in his future work. Otherwise, the present book is a meticulously researched work based on a wide variety of sources skilfully used in the narrative. It presents an engaging story of the indigo industry in India, its global expanse and immensity, with its links to the international market, imperialism, and ultimately to the global system of capitalism. The impact of global forces and events on the trade, for instance through the diplomatic rivalries of countries like Britain and France, are delineated. This study confirms again the strong and sustained nature of British imperial support to European business interests in India. The deputation of noted British scientists sent to research centres in India to promote the indigo industry demonstrates this well; but taken on a wider level, it also shows the movement of scientific community and proliferation of knowledge, propelled by economic factors and trade, globally (pp. 48–53; 68–76). Well written, and impressively readable, the book is sure to stimulate interest in the subject and prove a reference work for future research on indigo in India.

Notes

1. Deepak Kumar, *Science and the Raj 1857–1905* (New Delhi, 1995). [Back to \(1\)](#)
2. Iqtidar Alam Khan, 'Pre-modern indigo vats of Bayana', *Journal of Islamic Environmental Design Research Centre* (1989), 92–8; Ishrat Alam, 'New light on indigo production technology during the sixteenth and seventeenth centuries', in *Art and Culture*, ed. A. J. Qaisar and S. P. Verma (Jaipur, 1993); Ghulam Nadri, 'Indigo industry and trade in Gujrat in the seventeenth century' (unpublished M.Phil. dissertation, AMU, 1996); *Eighteenth Century Gujrat: The Dynamics of its Political Economy, 1750-1800* (Leiden, 2009). [Back to \(2\)](#)

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