

From Promise to Stagnation: East India Sugar 1792-1865.

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DECLARATION.

This thesis contains no material which has been accepted for the award of any other degree or diploma in this or any other university, although some material was used in my honours thesis, *European Enterprise in India: The Export Sugar Industry, Growth and Stagnation 1776-1850* (1995). To the best of my belief the thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis. I consent to the thesis being made available for photocopying and loan if accepted for the award of the degree.

Andrew James Ratledge,

Abstract

From Promise to Stagnation: East India Sugar 1792-1865.

During the early 1790s, the East India Company saw the possibility of a lucrative trade in East India sugar at a time when high sugar prices and the finite nature of the sugar resources of the British West India colonies, had become a matter of concern to British consumers. Periodically from 1796 through to the early 1820s, the emancipist lobby saw the possibility of large-scale sugar imports from the east as a way in which Britain could be supplied with sugar without recourse to the slave grown product. India's potential as a sugar producer was also a matter of concern to the West Indian planters and merchants, consequently they sought to create and maintain a tariff barrier to protect their British market.

With the abolition of slave ownership in the British Caribbean colonies and the resultant diminishment of sugar production, from 1836 British India was perceived by some influential groups in Britain as having the potential to produce large quantities of sugar to supply a British market at a time when industrialization was approaching its mature stage. This potential, although not as large as the more optimistic hoped, was considerable and came to a peak in the late 1840s. No sooner had the sub-continent begun to produce sugar in quantity, when the body politic in Britain opted for free trade policies. The Sugar Act of 1846 lowered tariff barriers until in 1854 all sugar entered the British market at the same level of duty.

The opening chapter examines the East India Company's role in the early years of this trade explaining the intimate connections between the intra-Asian sugar trade and sugar trade between the sub-continent, Europe and the American west coast. Two subsequent chapters look at the British home and re-export market, initially discussing the linkage between the protection of the West Indian product through restrictive tariffs and the community of interests of the various groups within the British body politic with relationship to this trade. The second of these two chapters is a discussion of the emergence of free trade policies and the effect of these on East India sugar imports to Britain.

Chapters four to six examine the development and failure of the two phases of European involvement c.1790-1809 and c.1828-1853. The discussion looks at the emergence of agricultural and trade policies of the government of British India, and the capitalisation of the industrialised sugar industry that emerges 1836-53. Other issues such as the agricultural, economic and commercial problems

encountered by this industry are examined. Chapter seven is a discussion of the role of the indigenous sugar industry, the nature of its product, the structure of the internal market, and the inability of European and indigenous sectors to form an equitable relationship.

The thesis is an attempt to relate the various components of the East India sugar trade to each other and explain why this trade failed to make a substantial impact in the British market place until the 1840s. Having established a major share of this market and enjoyed a short period of fluorescence 1840-1853, the sub-continental sugar industry stagnated until only a handful of European enterprises and the then diminishing sector of the indigenous industry continued to export sugar to Britain. During the last forty years of the century British India, capable of supplying Britain with 70,000 tons per annum in the late 1840's, became a "reserve" supplier only. The Sub-continent from time to time, sent large quantities to Britain, these, however, were rare occasions, brought about by the failure of regular sources in South America, the Caribbean or beet fields of Europe.

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Glossary of Terms

Arithia, adhat, arot	Commission agent and facilitator of commerce
Arrack, Toddy	Indigenous spirit distilled from molasses of cane and palm sugar
Aurangs	Area of collection surrounding E. I. Co. depot.
Bigah	Variable Land measure Bengal
Bandies	Bullock carts
Ballast or gruff cargo	Heavy goods i.e. sugar, saltpetre, rice stowed at the bottom of the hold to assist vessel stability
Bepari, Dalal or Pykar	Minor merchant or middleman
Candy	Measure of weight Madras Province 500 lb or 227 Kg
Chini	Indigenous cured Sugar
Cwt.	112 Lbs 1-20 long tons or 50.9 Kg.
Drawback	Refund of sugar import revenue
Free on Board (F.O.B).	Total cost of cargo when loaded at point of departure
Gurpatta	Crystalline sugar made from date gur.
Gur, Goor, Khaur,	
Jaggery, Behli, Dhosa	Indigenous raw sugars
Halwai	Indigenous sugar boiler
Hat, Haut	Periodical markets
Home Charges	Annual fee paid by government of British India to Home Government for military and administrative costs.
Karkhana	Indigenous Refinery
Kharkhanedars	Manufacturer of Indigenous khand or Proprietor of Khandisari
Kothi	Branch of indigenous firm or bank
Mahajins	Money lenders
Mofussil	Hinterland, "up-country"
Muscovado	Brown crystalline undrained sugar
Parghanah	Sub-division Administrative District
Picul, Chinese	133.3 Lb or 60.5 Kg c.1790-1830.
Ryot	Peasant cultivator
Shakkar-Shukkur	Indigenous crystalline sugar similar to Muscovado
Shroff	Banker
Sugar candy	White to brown sugar of large crystalline structure
Zamindars, Jotedars	Indigenous traditional title holders with responsibility for paying government land revenue
Zamindari Agriculture	System of mode of tenure and traditional relationship between peasant cultivator and traditional land titleholder common to Bengal
Ryotwari Agriculture	Ditto, common to northern districts of Madras province

Introduction

The subject of this thesis is the export of 'East India' sugars to the British market between the late eighteenth and the mid-nineteenth centuries. It draws extensively from the published papers of the East India Company; reports of Parliamentary Committees of Enquiry and on unpublished material from the India Office archives. The subject derives its significance from the degree of importance assigned by contemporaries to the importation of 'East India' sugars into the United Kingdom during this period. It was initially imported as an alternative to slave-produced sugar of the West Indies and subsequently as a new source of sweetener, when it appeared that the West Indian plantations, post emancipation, would be incapable of fully satisfying the rapidly expanding British market after 1836. In consequence, East India—meaning primarily, but by no means exclusively, the Indian sub-continent—was looked upon as the potential new 'sugar bowl' for the world's largest single market. In the event, however, no such outcome transpired, despite periodic enthusiasm for the trade's potential and considerable investment in the sub-continent in schemes to expand and develop the region's already substantial manufacture of sugar. By the eighteen fifties – and perhaps at an earlier date – it had become apparent that whatever quantities of 'East India' sugars might be exported to Britain, the sub-continent would remain at best a marginal supplier. The following pages are an explanation of why this was so, beginning with the first stirrings about India's potential in the 1790's and concluding with developments in the 1840's and 1850's that effectively spelt the end of such hopes.

Broadly stated, my argument is that a number of factors account for East India sugar's failure to gain a major share of the British market, despite the high hopes

Among the historical works dealing with sugar globally, the sub-continent is at times dealt with in a brief but informative manner.⁸ This, however; is not true of H. C Princen Geerligs (1912) and Noel Deerr (1949-50); both discuss sub-continental sugar production in some depth.⁹ The latter holds a special place in the canon of sugar histories, and its author had an intimate relationship with the sugar industry in British India. As a sugar technologist and chemist, Deerr gained experience in British Guiana, Hawaii, Mauritius, Cuba and finally India, where he worked for 19 years from 1922 to 1936, for Begg Sutherland and Co., as superintendent of their sugar factories.¹⁰ In this comprehensive work on the global history of sugar, the production of sugar in the sub-continent and the technology installed there is discussed in some detail. Volume 1 traces India's long history of sugar production, explaining something of its ancient origin and confirming it as a thriving industry centuries before the coming of European influences. In the same volume there is a short discussion of the growth and failure of British involvement in sugar production in India 1836-1850. This discussion notes the location of some of the most important factories with a short account of some leading Europeans in this industry. India, as the author points out, was not well represented in the body politic in Britain. Deerr argues that in the mid nineteenth century British India in general, and those involved in the Indian sugar industry in particular, *had but two champions in the British parliament, Mr B. Disraeli and Lord Bentinck.*¹¹

There is also a significant body of scholarship regarding industrial development, or the lack of it, in nineteenth century India, a debate in which the

⁸J. H. Galloway, *The Sugar Cane Industry*, (Cambridge, 1989).

⁹H. C. Princen Geerligs, *The Worlds Sugarcane Industry*, (London, 1912); Noel Deerr, *The History of Sugar*, Volumes, I and II (London, 1949-50).

¹⁰ John Howard Payne, "Noel Deerr: Classic Papers of a Sugar Cane Technologist", *Sugar*, Series 5, (Amsterdam, 1983), pp. 1-5.

¹¹Noel Deerr, *The History of Sugar* Two Volumes, p.57.

potential of the sugar industry to bring new technology and skills to India is largely ignored. Some publications deal fleetingly with this subject. Romesh Dutt, for example,¹² in a short discussion of the *Select Committee on Sugar and Coffee Planting* of 1847-48, remarks that the outcome was of little help to India. He does not, however, discuss the potential of the industry or the loss to India of imported industrial technology, when the industry failed. Volume 2 of *The Cambridge Economic History of India* has a comprehensive discussion on the demise of the spinning and weaving industries and the rise of the jute and cotton industry later in the century.¹³ However, the loss to the sub-continent of the technology the sugar industry introduced in the 1840s, once again does not feature in this discussion.

Industrialisation in India, however, was discussed in Volume 3 of the 1985 edition of *Modern Asian Studies*, an edition almost entirely taken up by South Asia scholarship. Rajnarayan Chandavarkar for example, attempts to find an explanation for India's economic development and progress to industrialisation, which does not solely rely on Marxist, and functionalist explanations.¹⁴ In his concluding remarks, while agreeing with those who look to the subservience of the India to the British imperial economy. Chandavarkar also gives considerable weight to factors such as, long-term social and commercial structures, the condition of the world market, the demands of the British internal economy and class structure, as elements shaping the development of the Indian economy and industrialisation.¹⁵ In the same edition Colin Simmons¹⁶ laments the shallowness of scholarship of industrialisation and its

¹² Romesh Dutt, *The Economic History of India in the Victorian Age*, (London, 1956).

¹³ Morris D. Morris, in Dharma D. Kurma (ed.), *The Cambridge Economic History of India*, (Cambridge, 1983),

¹⁴ Rajnarayan Chandavarkar, "Industrialization in India Before 1847: Conventional Approaches and Alternative Perspectives," *Modern Asian Studies*, 19, 3 (1985), pp. 623-669.

¹⁵ *Ibid*, pp. 666-668.

¹⁶ Colin Simmons, 'De-Industrialization, and the Indian Economy, c. 1850-1947, *Modern Asian Studies*, 19, 3, (1985), pp. 593-622.

technology in nineteenth century India. Although Simmons does not discuss the failed sugar industry, he does point out that even where introductions of technology failed, such failures should not be ignored. They too, can make a contribution toward overcoming the confusion that surrounds the blending in India of capital, custom and government, an area of study that Indianists have hitherto largely neglected,

This thesis seeks to add to the knowledge of the process of industrialisation in India in two ways, by examining the relationship between indigenous sugar producers, refiners and merchants and the sector manufacturing industrialised sugar. It also seeks to throw some light on questions relating to India's role in the diffusion of technology by offering a detailed discussion of the extent of technology employed in the making of industrialised sugar between 1828 and 1855. With regard to the sugar industry, it seeks to show that the explanation of Britain's conversion to the gospel of free trade is not of itself a sufficient explanation for the failure of the export sector of the sub-continental sugar industry in the mid nineteenth century.

The Thesis in Summary.

The first chapter, "The Opening Phase: Freights, War and Monopoly 1792-1814," discusses the sugar trade during this period and introduces the East India Company in its role as a trader and producer of sugar. Specifically, it will be argued that, while the company sought to promote sugar, they were constrained by a number of factors that meant that East India sugar had only very limited access to the British market during this period. Chief amongst these was the West India lobby, which from the outset, in the shape of West Indian stockholders and their supporters, vigorously opposed the directors and stockholders favouring imports of East India sugar. The chapter also discusses the complex web of intra-Asian trade, explaining the relationships between the Intra-Asian trade and the Asia-European trade and the

role of sugar in these two arms of trade. Much of the discussion is of the political economy of sugar, predominantly as a ballast cargo, and the effect of war and monopoly on freight costs between the sub-continent and Europe. Specifically, it will be argued that the Company sought to promote sugar as a commodity on the India-Britain route, while at the same time enhancing the intra-presidency sugar trade through replacement of sugar imports from Southern China and Southeast Asia with the sugar grown and manufactured in Bengal. However, the role that sugar played in the intra-presidency sugar trade made it difficult to do this without impairing the trade links between India and China.

In a discussion on the commercial economy of freight between India and Britain, it will be shown that there were two separate periods in which differing factors affected freight costs. The years 1790 to 1801 were, for the most part, a period of high sugar prices in Britain, during which there was some easing of the E.I.C's monopoly restrictions through the provision of cargo space in India built ships to supplement those of the E.I.C's own Indiamen. The second period, 1802 to 1814, was one during which cargo space between the sub-continent and Britain was at a premium, particularly for sugar and other gruff or heavy cargoes. This was brought about by greater adherence to the E. I. C's monopoly, which brought with it additional freight cost, as did high insurance premiums due to war in Europe. Such costs contributed substantially more than discriminatory duties to the inability of East India sugar to obtain a larger share of the British market. It will also be argued that sugar as a ballast cargo was subject to the same cost factors as other cargo and should not be perceived as a cargo carried with little or no cost.

Chapter 2, "The British Sugar Market and the Political Economy of East India Sugar 1792-1836," discusses the difficulties met by importers of East India sugar in

the British home and re-export markets and explains that this was also a factor in limiting the supply of East India sugar on the British markets during this period. The interplay of forces and events within Britain with regard to the place of East India sugar in the British market is complex. The chapter sets out to explain this complexity by examining the correlation between the costs inherent in importing sugar in a trade environment within a closed imperial trade system which offered protection with a high price tag attached by using sugar imports as a vehicle to raise import revenue. Intimately linked with the latter was the use of drawbacks and bounties financed from this revenue, and paid to sugar refiners and merchants to re-export to Europe sugar made too expensive for the working poor by high import duty. Of similar importance is the relationship between the various groups in the British body politic and the dispute that encompasses the period 1790-1834, between those that favoured or opposed slavery in the British colonies. It is this combination of protection, prices, revenue raising and subsidy that worked to prevent the free access of East India sugar, but these issues, in combination with the emancipation movements, helped to create a niche market for East India *khand*.

It will also be shown that the East India Company, despite holding a strong position in the body politic during much of the eighteenth century, was unwilling to press claims for equal duties before 1807, due to profitable trade links with West Indian slavers. After this date, the now politically weakened Company, burdened by debt, was unable to resist the West Indian lobby in their efforts to establish and maintain discriminatory duties. It will also be argued that the high rate of import duty imposed on sugar through the period 1801-1836 was an integral part of government policy of protection and revenue collection. The revenue requirements of the British exchequer were intimately linked with the economic welfare of the West Indies, a

reliable source for sugar and among the top five sources of import revenue. The combination of economic factors and the intimate links of influential groups in the body politic drove the policy of protection and discriminatory duties.

Chapter 3, "East India Sugar Exports and the British Sugar Market 1836-1865," discusses the political economy of sugar in Britain during this period. The chapter surveys key changes to British sugar duty legislation and relates them to the political economy of the British sugar market. In so doing, it advances an argument about the extent to which these factors impacted upon the evolution of the trade in East India sugar. In explaining the effect of these changes on sucrose imports from the sub-continent, it is argued that during the period 1840-1846 the British plantations, the only sugar producers allowed access to the home market without prohibitive import duties, could not produce sugar in sufficient quantities to supply the British market. Consequently, the period 1845-54 was one of legislative change to the duty regime and to the origin of sugar entering this market. It is also argued that to create profits and give an acceptable return on capital invested in buildings and technology in India, East India sugar needed to be possessed of characteristics which rendered it either suitable for refining or for re-export to Europe. Legislation in 1845 brought radical change to the way in which customs graded sugar imports, impacting on the European factories in India. The Act of 1846, which allowed sugar to enter the home market irrespective of its origin, convinced the sugar trade that massive quantities of foreign sugar would flood the market. Prices, already unstable, went into free fall. Coincidental with this instability was a financial crisis in 1847-48. The combined effect of these occurrences effectively brought to an end production in many of the European refineries in Bengal. Lastly, although most of the European sector of the sugar industry collapsed, the indigenous industry, having increased its

capacity by virtue of the export boom of the 1840s, continued to supply the British market with considerable quantities of *khand* and other sugars until the early 1860s.

Chapter 4, "The Introduction of West Indian sugar Making Technology in Bengal and Madras and Company Economic Policy in the Emerging Colonial State c. 1776-1810" moves the discussion from Europe to the sub-continent, where it is argued that the fundamental key to the history of East India sugar production and the British market is ultimately to be found. The chapter discusses the first wave of European sugar makers seeking to use West Indian technology to manufacture sugar in Bengal and Madras, circa 1787-1809. The chapter also discusses the implementation of land policy in a period during which the old mercantile administration of Bengal enters into its early colonial phase. It is argued that a correlation between these changes and the economic policies of the Company government effectively stifled the development of a European sugar industry based on West Indian technology in the sub-continent, while at the same time offering little incentive to European investment in the production and export of indigenous or "pre-industrial" sugar.

It is argued that, given some stimulus from the Bengal government, a sugar plantation sector might have emerged as the base for the production of the raw material for an industry manufacturing sugar with West Indian technology. Such an industry might well have made a significant contribution to Imperial trade and through its economic contribution gained some political influence in the British body politic. Instead, sugar production in the sub-continent remained an industry geared almost exclusively to the sub-continental market. Not until 1836 was the sub-continent considered to have the potential to be a reliable large-scale supplier for the large British market.

Chapter 5, "Industrialised Sugar Production and Infrastructure in the Sub-continent 1829-1850," examines the scope, capitalisation and some aspects of the operation of this industrial sugar making technology in North-eastern India and Madras during this period. In so doing, it elaborates and deepens the argument of the previous chapter that the situation in the sub-continent was, in the final analysis, the key to the prospects of turning India into the sugar bowl of the United Kingdom.

The innovative technology installed in Bengal and Madras is discussed and, as far as possible, an indication of the extent of capital is given. To emphasise the size of this investment and the advanced nature of the technology, a comparison is made between the European sector in Bengal and Madras and contemporary industries in Java and Mauritius. The operation of this machinery is also discussed, with particular reference to both the milling and sugar house technology

It is argued that this industry and its capital investment by British entrepreneurs should not be perceived as an attempt by colonists to construct an industry using only cheap and basic equipment. Instead, it was a huge investment in capital and equipment, much of which was equivalent to world's best practice. The period of operation of this technology was short; some had barely come on steam when a financial collapse occurred in Bengal in 1847-8. Yet it developed sufficiently to produce considerable quantities of sugar, rum and molasses, much of which entered British consumption or passed through the British emporium to Europe. In late 1847 colonial trade was particularly hard hit by a financial crisis which was precipitated by a series of events, amongst which were over investment in British railway infrastructure, the Irish potato famine and poor harvests in Britain, all of which contributed to a severe shortage of capital and a crisis of confidence in Calcutta as well as in the UK.

Chapter 6, "Industrialised Sugar Production in British India 1829-1850: Agricultural, Economic and Logistical Barriers" elaborates upon the argument pursued in the previous two chapters, that is to say the centrality of developments in the sub-continent to the overall story. It discusses several problems within the sub-continent with which the European sugar industry was forced to grapple. For example, zamindari agriculture was a system substantially different from the freehold title encountered in many sugar colonies where planters could grow cane unencumbered by traditional mores. Under this Bengali system, land leased for cane cultivation came complete with peasant cultivators growing subsistence crops for familial survival. Planters also encountered a harsh climate where canes, when they did not fail altogether, often produced yields considerably lower than those of other regions. Not all of these entrepreneurs attempted to grow cane: many processed raw sugar produced by indigenous cultivators to export quality. This group would also find the sub-continent a difficult environment in which to build an industry and maintain long-term viability.

This in turn forms the basis for a discussion of the nature of the capital invested during this period, and the investment in human resources through the skills of managers, engineers and vacuum pan operators.

Chapter 7, "The Indigenous Sugars of British India: Indigenous Merchants and the Sugar Markets of the Sub-continent 1792-1865" discusses the indigenous sugar industry of the sub-continent, and the role of indigenous sugar the international market. It also continues the argument of earlier chapters that the crux of the problems related to the failure of European and Indian capitalists to create a viable, long-term, export sugar industry lay in the sub-continent. In the period circa 1780 to 1810 and 1828 to 1850, entrepreneurs invested much capital and spent a great deal

of their physical and mental energy in attempts to manufacture sugar using initially West Indian technology, and later more advanced industrial technology capable of manufacturing sugar in the sub-continent. These entrepreneurs, particularly those involved in the sugar boom of 1840 to 1848, believed they could draw an almost endless supply of raw sugar from indigenous cultivators, or build a plantation industry utilising the large pool of cheap labour. In their calculations, the production capacity and export potential of the indigenous industry received little thought: they sought only to siphon off its products and value add them in their industrial sugar plants.

This chapter will demonstrate the productive capacity of that indigenous industry. It will be argued that indigenous involvement in the sugar industry did not cease at the door of the *karkhana* (indigenous refinery) or the (*hat*) or seasonal sugar market, the point, where European merchants purchased sugar for processing and export to Britain. The importance of indigenous merchants and capitalists to sugar production in the sub-continent was paramount. They made possible the manufacture of large quantities of raw sugar, by securing supplies at source. They did this by providing cash advances to cultivators: in effect, by vertical integrating the product from cane field to market. Without their resourcefulness, raw sugar for the indigenous *karkhanas* and most of the feedstock for the European factories would not have been available.

The opportunity for pre-industrial *khandisari* sugar to compete successfully in the British market, was not fully exploited during the 1820s. After 1836, however, sugar of this kind was the major component of Indian sugar exports, and continued to be until the combination of cheap colonial sugars and advanced technology forced this pre-industrial sugar from the British market.

In fact, the volume of pre-industrial sugar manufacture was of considerable magnitude, it not only provided *khandisari* sugar for export and raw material for the European processing plants, it also produced large quantities of sugar for internal consumption and for export overland to western and central India, to some regions of Asiatic Russia through Afghanistan and to Nepal.

This thesis seeks to tell the story of East India sugar exports to Britain from the cargoes of 1792 to the decline of the trade in the 1860s. To achieve this end, the discussion and argument embraces all aspects of this branch of commerce, from sugar produced from cane and palm trees in the sub-continent through to the British market.

Chapter 1.

The Opening Phase: Freights, War and Monopoly 1792-1814.

The history of the attempts to integrate the production of sugar in the Indian sub-continent with the requirements of the British market effectively begins in the early 1790s. The high prices and apparent shortage of sugar supplies in Britain were an important component of the East India Company's decision to consider shipping sugar from Bengal. This improvement in the economics of sugar production was of even greater importance to the West Indian sugar planters, they too benefited from the prevailing high prices, in that it allowed them to pay off some of the accumulated debts of the previous decade.¹ The increased demand for sugar was not confined to Britain. European markets were also buoyant and attracted a high level of re-exports from Britain of raw and value-added sugar. The East India Company had reason to believe that the high demand for sugar in Britain would be a long-term phenomenon: for quite apart from good prices there was also an increase in per capita consumption. By the second half of the eighteenth century, the drinking of tea laced with sugar had become virtually a national addiction, the origins of which lay in the social eating habits of the better sorts, to whom sugar was not only a sweetener in tea, but also a liberal ingredient in cakes, comfits, pastries and desserts. Consumption of such luxuries was, however, beyond the means of the working poor, but the drinking of hot sweet tea was enjoyed by all.²

With the foregoing conditions prevailing, the East India Company and East India merchants had every reason to believe that sugar could be integrated into

¹ Lowell J. Ragatz, *The Fall of the Planter Class in the British Caribbean, 1763-1833*, (New York, 1928), pp. 205-6.

² Sydney Mintz, *Sweetness and Power*, (New York, 1985). p. 117

East India freight manifests profitably, particularly as ballast. The idea of using sugar for this purpose between India and Britain had been under consideration by trade committees within the Company for some time. This committee saw sugar as an alternative to redwood or stones the usual form of ballast, the former sold at considerable loss and the latter had no value at all.³

Simultaneous with these discussions, the strong British re-export market received a further boost when Britain's main competitor, France, lost her principal source of supply, the West Indian island colony of St Domingo.⁴ A loss brought about through a successful revolt of the slave population, inspired by ideals of liberty and equality that pervaded the revolution in metropolitan France. Consequently, the once abundant tropical produce of the island ceased to flow to French ports.⁵

The idea of importing sugar from India, however, was not solely a response to the sugar shortage and attendant commercial opportunities. It was in part, a response to requests from East India merchants resident in India seeking to reverse the fortunes of the once vibrant trade in Bengal sugar to Southeast Asia, the Red Sea and Persian Gulf.⁶ Just as sugar featured strongly in trans-Atlantic trade, it had grown in importance in South Asia where it had become a common commodity in and through the sub-continent. Considerable amounts of sugar were exported and then re-exported in foreign vessels from the ports of the

³, *Papers Respecting the Culture and Manufacture of Sugar in British India*, (London, 1822) Hereafter *E.I.S. Appendix 1*, p. 26, Extract, of a Letter Commercial Department London to Bengal

⁴ *Ibid* Appendix 1 p.6, Report of the Committee of Warehouse. Prior to the rebellion, several continental markets received sugar from St Domingo via French merchants; by 1792, these same markets were selling sugar from the British sugar islands.

⁵ Lowell J. Ragatz, *Planter Class*, p.206. The economy of the sugar plantation in the British West Indies in the 1780s was on the verge of economic collapse, until the slave revolt in St. Domingo brought a dramatic change to their fortunes.

⁶*E.I.S. Appendix 1*, pp. 13-19, Extract Fort William Revenue Consultation 5-6-1776.

British Presidencies to Copenhagen, Hamburg and Ostend, by the Country trade⁷ and in Arab dhows, to the markets in the Red Sea, Persian Gulf and East Africa.

It was, however, the amount of Bengal sugar exported directly to European destinations that worried the Company and its stockholders, their preference was for this sugar to come to Britain in the holds of their chartered Indiamen, not as was the case, in American, Danish and other foreign ships. Such an outcome would mean that as the sugar passed through the British emporium to Europe ports, then British merchants, refiners and workers would become beneficiaries.

Shortly after the commencement of East India sugar imports the re-export market was further strengthened, when in 1793 war between Britain and Revolutionary France began. Sugar supplies to France were disrupted and prices increased, especially after 1794 when all the French sugar islands fell temporarily into British hands. From 1793 to 1799, war and shortage in Britain and on the continent, strengthened the position of British merchants and refiners, effectively increasing the re-export of value added or raw sugar to the European market.⁸

This first chapter will be a discussion of all aspects of the trade in East India sugar between 1792 and 1814, and the political economy of freight where it interacts with sugar. It will be shown that a whole series of impediments prevented any speedy or substantial growth in the trade in sugar between British

⁷The Country Trade was comprised of ships operating under license from the East India Company, usually officered by Britons. These ships operated largely independent of the Company on the routes from the Indian Presidencies through mainland and archipelagic South East Asia to Canton. See: Michael Greenberg, *British Trade and the Opening of China* (Westport Connecticut, 1979). H. B. Morse, *The Chronicle of the East India Company Trading to China, Vols. 1-6, (London, 1926-29)*. Tan Chung, "The British-India-China Trade Triangle 1771-1840", *Indian Economic and Social History Review*, 11. 4 (1974) pp. 411-431. P. J. Marshall, "Private British Trade in the Indian Ocean Before 1800," pp. 237-259, in Om Prakash (ed.), *European Commercial Expansion in Early Modern Asia*, (Newbury, 1997). Northcote C. Parkinson *Trade in the Eastern Seas, 1793-1813* (Cambridge, 1937). C. D. Cowan, "Early Penang and the Rise of

India and Britain during this period. The discussion with regard to trade and its impediments will be divided into four component parts. The first part will look at the role of sugar in the trade between the British Indian presidencies. The second, intimately connected to the first, will discuss the intra-Asian trade in sugar. The third will examine the role of American and other neutral ships as they carried sub-continental and other Asian produced sugar from British Indian ports, directly or via the American east coast to Europe. This section of the sugar trade is of particular interest as a medium through which British funds could be repatriated from India to Britain. The fourth section will discuss the political economy of East India freight, with particularly reference to the cost burden of war and the India monopoly.

Specifically, it will be argued that the promotion of the sugar trade in south Asia was not intended by the East India Company to be exclusively between the sub-continent and Britain. They also sought to promote the inter-Presidency sugar trade through replacement of imported Asian sugar with the domestic product. Their intention was to stimulate cultivation and manufacture of sugar in Bengal, with its attendant economic benefits to cane cultivators, sugar manufacturers and to commerce, and to enhance the land revenues of the Presidency. The intra-Presidency sugar trade and sugar exports from India to Britain were intricately woven into the web of intra-Asian trade. Consequently, the Company faced the difficult task of promoting both arms of the sugar trade without impairing the trade links between India and China. These trade links were vital to the interests of the Company; along them travelled the commodities

Singapore 1805-1832," *JMBRAS*, Vol., XXIII, Part 2, (1970), pp. 1-204. E. H. Prichard, *The Crucial Years of Anglo-Chinese Relations 1750-1800*, (Washington, 1936).

⁸ Seymour Dreyser, *Econocide: British Slavery in the Era of Abolition*, (Pittsburgh, 1977), p. 116.

that generated capital to finance the profitable China tea trade.⁹ The ships that carried commodities from India, unloaded Chinese produced cargo in Bombay and Madras on the return leg from Canton, consequently, these two ports became entrepots for Asian sugar and other commodities, and Calcutta consumed Chinese sugar candy.

In the discussion of the political economy of freight, it will be argued that there were two separate periods, each having differing factors with regard to freight costs. The first, 1790 to 1801, for the most part a period of high sugar prices in Britain, one during the India monopoly was not rigidly enforced. The second period, 1802 to 1813, was one during which cargo space between the sub-continent and Britain was at a premium, particularly for sugar and other "gruff" or heavy cargoes, a situation brought about by closer adherence to monopoly. This factor, and higher freight costs brought about by war, such as increased insurance premiums, convoy duty and other costs and contingencies, increased the cost of East India sugar in the British market.

A Brief Overview of International Trade as it Affected East India Sugar,

c.1793.

This first chapter sets out to explain sugar as a trade commodity in the complex web of Asian trade, and its place in the trade between Asia, Europe and the United States of America. For much of this period, maritime trade in Asia was touched by, and adapted to, hostilities between the European powers. Conflicts that reached into Asia and affected the operation of trade, tended to create a favourable environment for ships of neutral states. These ships carried sugar and other Asian produce through oceans patrolled by naval ships and

⁹ Tan Chung, "Trade Triangle (1717-1840)," (1974), pp. 427-429 passim. Indian opium and cotton, when

privateers of the hostile powers to the American east coast or direct to Ostend, Hamburg, Copenhagen and ports in the Mediterranean. This was a war of global proportions, which waged continuously from 1793 to 1815 with the exception of a short break in 1802, (the peace of Amiens). A conflict during which, Britain and France attempted to inflict economic sanctions on each other's commerce. European merchant communities in Asia, though far from their homelands, were expected to give patriotic support to their countries of origin and obey the rules of commerce adopted by their home government. They were called upon to both desist or to assist the carriage of enemy goods via neutral flags through their nations' maritime blockades. Many of them, however, kept such rules more in breach than observance, continuing to trade in those commodities their European and Asian customers required.¹⁰

Sugar played a vital part in this trade as stabilising ballast. It should, however, be made clear from the outset that much of the sugar in the holds of these ships had a somewhat different nature to that produced in the Americas. It was frequently quite different from the coarse brown muscovado or the white clayed sugar packed in barrels (hogsheads) or boxes in the holds of ships crossing the Atlantic to the ports of London, Bristol, Liverpool, Glasgow, Greenoch or Leith. Instead, some was white Chinese sugar or pale coloured sugar from Java or large crystalline sugar candies of both these producers; the sugars produced in Manila or Siam, however, was not unlike the West Indian muscovado. Some was a fine-grained white to yellow sugar produced by almost numberless sub-continental *karkhanas*, (indigenous sugar refineries, see

sold in Canton, created the capital that financed the East India Company's trade with China.

¹⁰ Ole Feldbaek, "Dutch Batavian Trade via Copenhagen 1795-1807: A Study of Colonial Trade and Neutrality," *The Scandinavian Economic Review*, Vol. XXI, No. 1, pp. 43-75. pp. 45-46.

glossary of terms page V111) which will be referred to frequently in this thesis as *khand* or *khandisari* sugar. Some of this South Asian sugar was also similar to West Indian muscovado, called *shukker* or *shakkar*. In the sub-continent raw unrefined sugar was known by a variety of names, such as *gur*, *goor* or *jaggery*. These low-grade, dark brown sugars, when exported to Britain, were commonly referred to as *khaur*.¹¹ The sugar that played the most significant role in the East India sugar trade from 1792 to 1860 was, however, the fine-grained, light coloured *khandisari* sugar; these will be referred to as pre-industrial sugar. Other sugars were also produced, initially by Europeans using West Indian methods, and from 1828, the production of the modern sugarhouses will be referred to as industrial sugar; which also has a prominent place in this story.

Before the sugar trade from India to Britain could begin in earnest, there were barriers to be overcome. The largest of these would be the opposition of the other main branch of the British mercantile trading world of the late eighteenth century, the West Indians. Their opposition was almost a given, with their economy largely dependent on sugar (Chapter 2 below);¹² therefore conflict between the mercantile interests of the two Indies was almost inevitable.¹³ As the

¹¹ George Watt, *The Commercial Products of India*, (New Delhi, 1908), p. 128, 92 and 1109. *Khand* is the general name for sugar, which ranges from *misri* or *chini*, a sugar with small white crystalline structure, to *kuza khand*, a sugar of larger crystalline structure. It is usually not possible to strictly define the whiteness of *khand*, or how fine it was, but where this is possible a further description such as fine or coarse will be given.

¹² *E. I. S.*, Appendix 1 pp. 56-7, Board of Trade Consultations 7 August 1792. The Board believed that the monopoly position of the West Indian planters was quite legitimate up to 1790. From this point, however, with the West Indies seemingly unable to keep up with demand in the British market, East India sugar should be given equality in duties.

¹³ The following publications have been consulted with regard to the West Indian economy and the profitability of the sugar industry in the islands. Phillip D. Curtin, "The British Sugar Duties and West Indian Prosperity," *The Journal of Economic History* Vol., XIV No. 1 (Winter, 1954) pp. 157-164; Gisela Eisener, *Jamaica 1830-1930: A Study of Economic Growth*, (Westport, 1961), William A. Green, "The Planter Class and British West Indian Sugar Production, Before and After Emancipation," *The Economic History Review*, Second Series, Vol. XXVI, No. 3 (August, 1973), pp. 448-463, R. R. Ward, "The Profitability of Sugar Planting in the British West Indies 1650-1834," *Economic History Review*, Second Series, 31 (May, 1978) pp. 197-213.

long-term and virtually sole supplier of sugar to the British market, the West Indies could not be expected to stand idly by while the monopolists of the East sought entrance into what they perceived as their "charter of monopoly". Their opposition in the East India Court, and later in parliament, would be considerable. For the East India Company too, it was not a simple matter of enhancing their trading prospects by adding sugar to their cargo manifests. They too, had a vital interest in the welfare of the West Indian sugar trade; Bengali textiles and other Asian goods were a medium through which the slavers purchased the "black gold". A serious conflict between the East and West Indians over East India sugar imports could put this profitable trade in jeopardy.^{14 15}

At the start of our period, sugar offered East India and Asian based merchants a particularly useful commodity as a profitable ballast or gruff cargo, which helped to facilitate the trade links of the Asian Country trade. These ships, owned by European or Asian merchants, manned by lascar seamen and staffed with British officers, carried much of the commodity trade on the routes to and from Canton in Southern China, through Southeast Asia to India, the Red Sea and Persian Gulf (Map page 35). From 1792, sugar began to fulfil similar role between India and Britain, offering profitability and utility. Ballast cargo was vital in sailing vessels; they required a heavy or gruff cargo loaded near the bottom of the hull to provide stability and good handling at sea. In addition, bills could be

¹⁴ Seymour Dreyser, (1977), p. 179. In 1807, just prior to parliament's vote to abolish the slave trade in the British Empire, an East India merchant wrote to Lord Melville (Dundas), explaining the close trade links between the East India Company and the slave trade. He pointed out that the sale of cloth and piece goods to this trade was highly profitable for East India merchants. He pointed out that there was £50,000 worth of goods in warehouses and another £100,000 on the high seas, all earmarked for this trade.

¹⁵ Dixon Peter F. "The Politics of Emancipation: The Movement for the Abolition of Slavery in the British West Indies 1807-1833," PhD. Dissertation, (Oxford, 1971), p.59. Circa 1770 a slave ship cost £13,134 to outfit, of this total £3,415 was East India goods, or 26 percent of the total cost. During 1878, the value of goods shipped to Africa from Britain was close to £890,000. Of this total, £190,000, or 21.3 percent, went to the slave trade, p. 59.

raised in Calcutta against the value of sugar, allowing both Company and private funds an additional avenue through which to repatriate capital to Britain, or as a means to remit the Company's "home charges" (primarily the cost of the British army garrisoned in India) to the British government.

East India Sugar 1792: Discussion and Decision.

For East India stockholders with commercial interests in the West Indian sugar plantation industry, competition with East India sugar presented a serious threat. Consequently, when the proposal came before the General Court of the United Company of Merchants of England Trading to the East Indies, their opposition was vigorous. The meeting at Leadenhall Street, London, at noon on 15 March 1792, did not set out to address a wide range of issues with regard to importing East India sugar. An agenda was framed in the hope of confining the meeting to a resolution relating to equalisation of sugar duties paid by both East and West Indian imports. The proposal requested the Lords of the Treasury to reduce the import duty on East India sugar from the £37.81 pence ad valorem to the British West Indian or "British Plantation" rate then £15 per ton for muscovado and £31.16 for white clayed sugar. The carrot offered to the government for such a change was that the admittance of East India sugar on equal duty to West Indian would help alleviate a shortage then encountered by British consumers.¹⁶ In addition, equalisation offered an opportunity to enhance government revenues since increased consumption would bring in more revenue and, should Company profits increase substantially through sugar imports, the public purse would benefit because twenty-five percent of all profit in excess of

¹⁶ Lowell J. Ragatz, *Planter Class*, (1928), p. 206. The high price of sugar due to the St. Domingo crisis caused much alarm among consumers. Grocers called upon the planters of the West Indies to greatly

eight percent went into government revenue.¹⁷ It was also pointed out that high sugar duties ensured East India sugar and some other Indian produce were carried in the holds of foreign vessels sailing from Indian Presidency ports direct to Europe or via the Atlantic coast of the USA. Such ships were not subject to the British Navigation Acts and were thus able to avoid duties payable in Britain.¹⁸

An additional factor likely to influence votes was the sharp division in the East India Court on the issue of ship charters. The combination of this dispute and West Indian objections to East India sugar imports would ensure any discussion could not be confined to one subject. The dispute on charters was between the "old ship owners" and the would-be "new owners." The former, long-term holders of ship charters were fighting to retain their hold on the lucrative charter arrangements, while the other faction sought to break down this cartel and participate in the lucrative chartering of ships to the East India Company.¹⁹ The group representative of the "new owners" also happened to be in support of the importation of East India sugar.

Randle Jackson,²⁰ one of those who proposed the resolution, was aware of West Indian anxiety and sought to give assurances that the Company was not seeking confrontation. He pointed to the linkage between tea and sugar consumption, reminding West Indian stockholders that they also risked loss if the highly profitable tea trade declined because the working poor were unable to

increase supply. Refiners, worried about a possible shortfall of supply, called for East India sugar to be admitted at equal rates of duty to West Indian sugars.

¹⁷ *E. I. S. App.* 1 pp. 2-3. Proceedings of the General Court of the East India Company 15th March 1792.

¹⁸ *Ibid.*

¹⁹ Jean Sutton, *Lords of the East*, (London, 1981), pp. 35-6

²⁰ C. H. Phillips, *The East India Company, 1784-1834*, (Manchester, 1961) p. 119. Randall Jackson was elected to a directorship of the Company in 1802. One of David Scott's supporters, he sought to bring a greater degree of flexibility to the shipping between Britain and India.

afford sugar to sweeten their tea.²¹ This close correlation between tea and sugar in Britain was also inextricably linked to the Company's lucrative trade network in Asia. Jackson explained that Bengal merchants used sugar as an exchange medium in the cotton trade between Calcutta and Bombay, the raw material of the textile industry of Bengal at that time being an important item in the trade. Sugar cultivation in Bengal, he said, "had declined to such a degree, that there was insufficient available to facilitate this trade." This dearth necessitated shipment of bullion from Britain and tended to deplete the Company's silver reserves. The decline of Bengal's sugar industry had also allowed the Dutch with their Batavia sugar to dominate the intra-Asian trade. Other nations had also taken advantage of the situation, an example being Company troops in Madras, who now received their sugar rations from Portuguese traders based in Goa.²² Randle Jackson obviously had a good understanding of the role of sugar in the inter-Presidency trade, but if he was aware of it, he did not speak of the role cotton and sugar cargoes played in the trade between India and China.

Mr. G. Dallas, later Sir George,²³ spoke of the possible consequences of importing large quantities of East India sugar, warning of a serious confrontation between the East and West Indian mercantile interests.²⁴ Francis Baring, Deputy Chair of the Board and a loyal supporter of the West Indian lobby,^{25,26} opposed the resolution. He, however, took a more pragmatic view explaining that the

²¹ *A Regular Series of Debates that have Taken Place at India House*, (London, 1793), p. 22.

²² *Ibid*, p. 23.

²³ C. H. Phillips, (1961), p.110. Sir George Dallas sought to ease monopoly restriction on shipping between India and Britain. He and Thomas Henchman were the authors of pamphlets in 1801-2 supporting the use of India built ships in the trade.

²⁴ Tan Chung, "Trade Triangle," (1974), p. 27.

²⁵ Peter F. Dixon, "Politics of Emancipation", (1971). pp. 39-40. Fearing the growing influence of the slave emancipation movement, around 1799 the planter interests of the West Indies formed an association in London that soon become known as the West Indian Committee.

resolution should not ask for equalisation of duties, but seek instead some modification in favour of East India sugar. The West Indians, he argued, would perceive any attempt to equalise duties "as an attempt to undersell them in the sugar market." He believed a gradual growth of this trade was possible, pointing out that the East Indies, in the short term, was unlikely to supply large quantities of sugar to the British market.²⁷ As will be seen in chapter four below, he would be proved correct. Strong opposition was encountered from West Indian stockholders; this indeed, was a harbinger of future discord.²⁸ The mood of the meeting, however, was to proceed with the resolution. Lord Kinnard, from the chair, reflected this when he announced that during the course of the meeting he had shifted position on importation of East India sugar, stating: "the opposition of the West Indian faction had helped bring him to the belief that it could be done profitably, why else would these gentleman of business oppose it so vigorously?"²⁹ The meeting voted in favour of the resolution to request the treasury to equalise the duties.

A reply was received on April 19th of the same year, in the shape of a refusal from the Lords of the Treasury to accede to their resolution.³⁰ At a subsequent meeting a few days later, the Court heard this decision. The majority expressed their disappointment and moved on to a discussion of other issues relevant to the sugar trade of the East Indies, particularly the question of shipping

²⁶ *Ibid*, p.41-2. Baring consistently supported the West Indian interests in parliament, as well as attending many meetings of the West Indian Committee.

²⁷ *A Series of Debates*, (1793), p. 33.

²⁸ Noel Deerr, *History of Sugar* Vols. 2 (1950), p. 421. The first account of West Indian planters uniting to influence the British parliament dates from 1670. From 1690, the Jamaica coffee house in St. Michael's Alley, Cornhill was used as a place where people with interests in the West Indies met. It later became The Planter's Club. Other West Indian organisations were the Society of West India Merchants and the Society of West Indian Planters and Merchants. The minute books of the Society of West Indian Merchants date from 11-4-1769, and the latter Society from 1785. The two societies did not actually amalgamate until 1843.

²⁹ *A Series of Debates*, (1793), p. 36.

and the cost of freight between the East Indies and Britain.³¹ These and other issues, extensively aired at these two meetings, is the subject of much of the discussion in this and the subsequent chapter.

Perceptions and Realities 1790-92

Much of the discussion in this thesis will be Euro centric, in that it will examine political and commercial activity emanating from London, the city from which the British Empire and the East India Company were administered. It was also the European emporium of all British imperial, and much of the Eastern trade, the focal point of a commercial triangle, the points of which were Britain, India and Canton in China. It was here that a growing complex of East India docks and warehouses received ships loaded with tea and other Asian commodities to be consumed in Britain or re-exported. Facilities built up during the late 1790s and early 1800s, which enabled the Company to store sugar or any commodity, for long periods, offering the commodity for sale only when prices trended upward.³² As we shall see, this was particularly helpful with regard to good quality *khand*, which unlike muscovado was a dry sugar that could be stored for lengthy periods without deterioration.

The prospect of competition from Bengal sugar was bound to bring the merchant communities of the two Indies into some level of confrontation. It was, perhaps, equally inevitable that the corrupt practises of Company officials in Bengal and the fortunes made by Clive and the nabobs, would be used by the

³⁰ *Ibid*, p.38

³¹ *Ibid*. p. 36

³² *Select Committee East Indian Affairs* 1812-13 p. 219, Evidence of John Vivian, Solicitor in Excise. With their extensive warehousing facilities, the East Indian Company could store Asian products including sugar, until the market looked favourable. In this way, they were able to release the sugar to sales when prices trended upward. Any sugar stored for long periods by necessity had to be dry and clean, damp sugars such as *khaur* or undrained muscovado deteriorated. Better quality indigenous sugars fitted this description, hence

West India lobby in their attempts to sway opinion in their favour with regard to the sugar duty question. This perception and that of the fertility of Bengal, a land where more than one crop a year was possible, helped to create a image of the vast Gangiatic plains as an agricultural El Dorado, able to supply Britain with unlimited quantities of sugar and other produce.³³ As will be shown in chapter four, such perceptions were something of a moveable feast and could be manipulated to serve changing circumstances.

The Company's knowledge of the productive capacity of Bengal as a sugar producer, was limited in 1790, but their understanding of the capability of the Presidencies sugar production, was similar to that of Baring; that Bengal could not quickly become a major supplier to the British market. This, however, was not a perception held by many West Indian planters, amongst whom Bengal's perceived fertility was causing deep angst, and tended to increase their opposition to imports of East India sugar.³⁴ The Company, for its part, sought to clarify the situation by explaining their limited objectives in the British market, with the view to promoting economic activity through the cultivation of the agricultural produce of Bengal. Sugar cultivation not only produced an exportable commodity, it also enhanced Company revenue, since sugar cane cultivation attracted higher land tax than most other crops.³⁵ Although the Company had a level of awareness via internal customs records of Bengal's actual capacity for

the re-issuing of instructions to their agents to buy only good, dry, clean sugar for exportation to Britain. As per *East Indian Sugar* (1822) appendix 1 and 2 passim.

³³ *E.I.S App. 1 pp. 70-71*, Board of Trade Consultations 31 August 1792, Letter from the B. O. T. Calcutta to Governor General in Council. A resident in India wrote home in 1790 that India could supply sufficient sugar for twenty ships in the coming season and 200 hundred ships during the season 1792-3.

³⁴ Zachary Macaulay, *East and West Indian Sugar: A Refutation of the Claims of West Indian Planters to Discriminatory Duties*, (London, 1823), Appendix A, p. 104. In a report from the Jamaica Assembly tabled in the House of Commons in 1805, Bengal is described as a veritable agricultural El Dorado. The report called attention to the great fertility of the region and its many other natural advantages: abundant irrigation, cheap labour and good internal transport via its riverine systems.

sugar production and cultivation, not until 1793 would more detailed information become available (chapter 7 below), only then would they have some indication of *khandisari* and raw sugar production.³⁶ This information would prove to be in stark contrast to the impression held by many West Indian planters.

The sub-continent produced considerable amounts of sugar, but was not a large-scale exporter of sugar in the period 1792-1814. This is clearly shown in the table below. For example, from 1800-1814 the sub-continent was actually a net importer for five of these fifteen years. It is then, important to perceive the sub-continent at the turn of the eighteenth century in its Asian context and not

Table i: Value of Exports and Imports of Sugar to and from British territories in the Sub-continent 1795-6-1813-14.

Year	Value Imports	Estimated Tonnage	Value Exports		Estimated Tonnage
1795-6*	N/a		£90,360	£30.13	2,999
1796-7*	N/a		152,250	25.08	6,070
1797-8*	N/a		97,432	24.04	3,993
1798-9*	N/a		169,783	21.96	7,731
1799-0*	N/a		193,191	17.52	11,026
1800-1*	£282,637	10,196	98,155	21.69	4,469
1801-2*	131,310	4,737	77,801	19.61	3,967
1802-3*	250,152	9,024	171,323	29.26	5,855
1803-4*	126,724	4,571	181,139	25.92	6,988
1804-5*	16,922	610	136,860	26.75	5,166
1805-6*	257,368	9,284	282,903	25.17	11,239
1806-7	209,849	7,570	277,393	25.66	10,810
1807-8*	157,577	5,684	113,029	17.16	6,586
1808-9*	143,055	5,160	90,382	31.44	2,875
1809-10*	146,703	5,292	130,877	23.36	5,602
1810-11*	101,694	3,668	77,500	22.38	3,643
1811-12*	97,648	3,524	94,616	23.06	4,103
1812-13*	170,356	6,145	145,531	20.49	7,102
1813-14*	199,482	7,194	105,226	21.67	4,856

The estimation of import and export tonnage is based on the values given on in E.I.S pages 62-68, which have been converted to sterling @ 8 Sicca Rupees to one pound. Import prices per ton are based on values given by H. B. Morse of £27,27 per ton, see note 48 below. Export tonnages on the FOB price in Calcutta paid by the Company in each year. For fuller information, see Appendix 1 table 30.

³⁵ E I S. App. 1 p. 16. Report of the Committee of Warehouses 29 February 1792 Land cultivated with sugar cane paid up to four times the rent of many other crops.

³⁶ *Ibid*, pp. 23-24. The Governor General in Council instructed the Calcutta Board of Trade to instruct its officers in sugar producing areas of Bengal to gather detailed information on sugar cultivation and manufacture in their districts.

Be compared with the Caribbean sugar colonies. The Indian sub-continent produced sugar mainly for domestic consumption, exporting only 4,000 to 11, 000 tons per annum between 1800 and 1814. Her ports, as mentioned above, acted as entrepots for the sugar of other Asian and Southeast Asian producers. In this trade, Calcutta received some imports of Asian sugar, mostly sugar candy, and was an exit port for the sugar of the interior, while Bombay filled the role of an Asian emporium. Madras also produced small amounts of sugar, and imported and re-exported sugar and sugar candy from Canton and Southeast Asia.³⁷

Indian Ports as Entrepots in the Intra-Asian Sugar Trade.

The British merchants of Calcutta and East India stockholders in London were at this time almost entirely preoccupied with the sugar trade between India and Britain. Company servants, however, in their discussions on the promotion of sugar cultivation and manufacture in Bengal, took a more holistic view. They looked at the possibility of making incursions into the British market, increased penetration of the European market and had an eye on the possibility of improving the sugar trade between the Indian Presidencies. To achieve the latter, they proposed that additional Bengal sugar be shipped in the holds of Country ships sailing from Calcutta to Madras and Bombay where they loaded cotton for Canton.³⁸ If this trade could be encouraged it would increase land revenue in Bengal, which in turn would provide capital to pay for the expensive government establishments of Bombay and Madras.³⁹ To facilitate this the

³⁷ Sugar candy is a sugar comprised of large crystals, which in British India found a market among wealthy Indians and British residents.

³⁸ *E I S. App.* 1 p. 12, Fort William Revenue Consultations, 5th June 1776.

³⁹ *Ibid.*, p. 26, Bengal Commercial and Shipping Consultations 14th July 1790 Enclosure.

Calcutta Government requested that the two Presidencies reduce town duties on goods imported from Calcutta.⁴⁰

As noted above, Bombay and to a lesser extent Madras, were well-established entrepôts, which handled considerable quantities of Asian sugar; for internal consumption and re-export to ports in the Red Sea, Persian Gulf and East Africa.⁴¹ An indication of the nature and origin of these exports is available from the records of these two ports 1785 to 1790. For example, Bombay imported sugar with an average annual value of 18,064 Sicca Rupees, of which 15 percent was Bengali, 44 percent Batavian 32 percent Chinese with small amounts coming from Bassur and Isle de France (Mauritius).⁴² Imports to Madras 1785 to 1789, show that of the 480 tons imported, 37 percent was Bengal sugar, 38 percent came from a variety of small ports within the sub-continent, while Manila, China and Batavia contributed some 25 percent.⁴³ Imports of candy to Madras also indicate a heavy bias in favour of Bengal: some 564 tons were imported of which 68 percent was from Bengal, 23 per cent from China and Batavia, smaller sub-continental producers contributed 9 percent.⁴⁴ These figures were indicative of potential for increased penetration of Bengali sugar and candy, this and the potential of the British market offered Company officials and private traders reason for optimism.

Sub-continental Sugar Imports and the Role of Sugar in the Country Trade.

The concept of import replacement by Bengali sugar products, however, ran counter to long-standing trade links of the Country trade in which Chinese

⁴⁰ *Ibid.*

⁴¹ *Ibid.*, p. 27 Report to the Committee of Warehouses, 29-2-1792,

⁴² *Ibid.*, p. 32, Bombay Revenue Consultations, 2-11-1790.

⁴³ *Ibid.*, p. 34, Fort St. George Revenue Consultations: An Account of the Quantity of Sugar Imported into Bombay.

⁴⁴ *Ibid.*, p. 35, Fort St. George Revenue Consultations: Account of Sugar Candy Imported into Bombay.

sugar was a primarily a ballast cargo. In essence, self-sufficiency and the economic operation of the Country trade were not mutually compatible. Country ships also required ballast, many sailed from Canton with near empty hulls, and the high quality pre-industrial sugars of China were both profitable cargo and heavy ballast. Not all of the sugar carried from Canton, however, competed with the domestic Indian product, as indicated in table ii below, some was re-exported

Table ii: Sugar Exports from British Indian Ports to Persian Gulf and Red Sea. ⁴⁵

Year	Value	Est. Tons	Year	Value	Est. Tons
1802-3	49,414	1,782	1808-9	70,661	2,549
1803-4	38,195	1,378	18-9-10	104,115	3,755
1804-5	46,306	1,607	1810-11	45,579	1,644
1805-6	118,512	4,275	1811-12	68,112	2,457
1806-7	138,437	4,994	1812-13	131,176	4,732
1807-8	61,180	2,207	1813-14	94,882	3,423

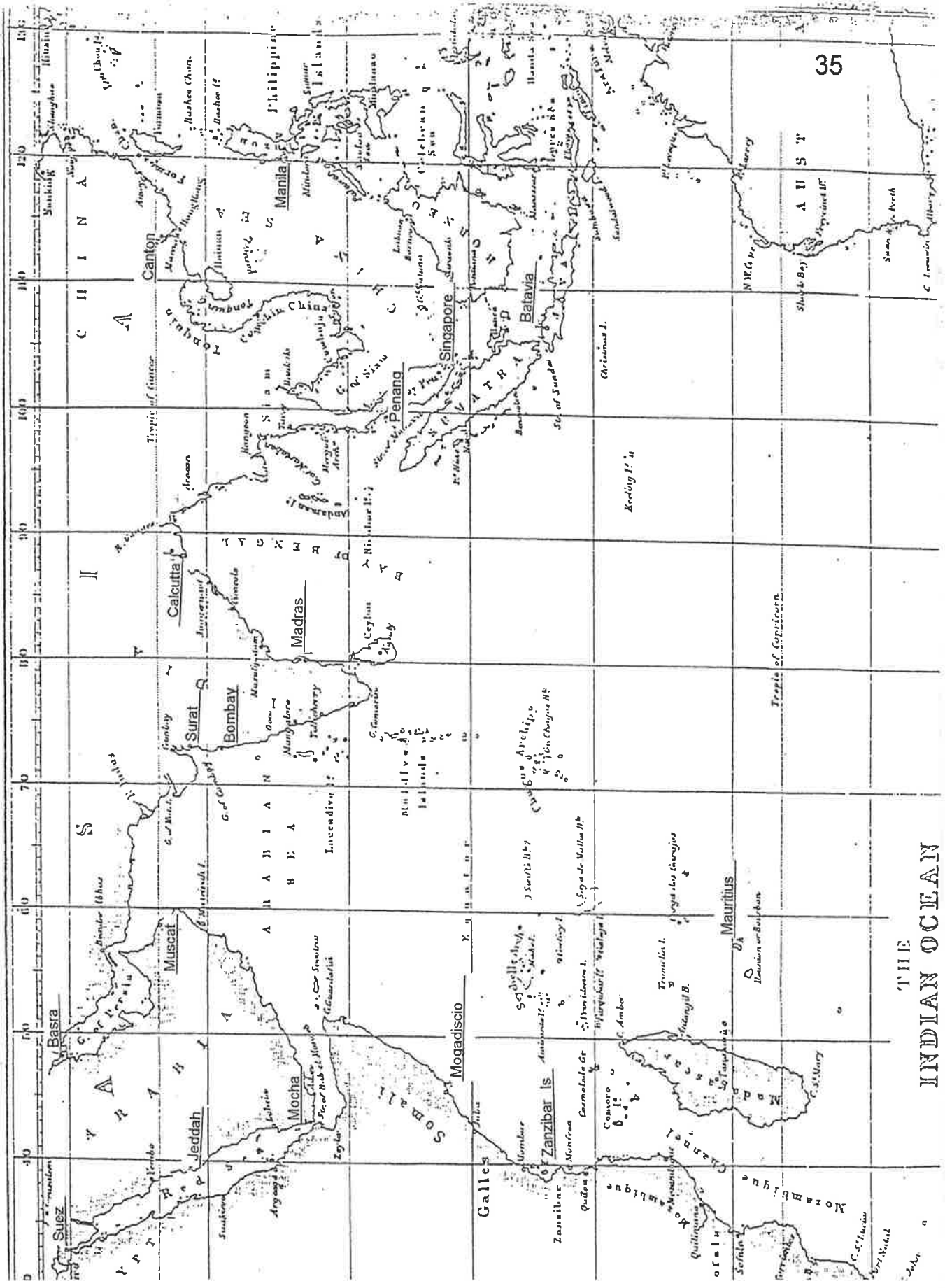
The same method of calculation applies to this table as to table i above

to the ports of East Africa, the Red Sea and the Persian Gulf (see map page 35). During the period 1802-1814, table i indicates that some 2,000 tons per annum of this imported sugar was consumed in the sub-continent (for more complete data see Appendix 1, Table 3).

Those whose task it was to formulate the Company's trade with regard to sugar might well have desired a high level of Import replacement, but as long as sugar served a key role in the triangular trade between Britain, India and Canton, they could not seriously seek to reduce the level of imports. The country trade routes from the sub-continent to Canton were the means by which capital was generated to facilitate the tea trade from China to London; the only branch of Company trade that made solid profits.⁴⁶

⁴⁵ *Ibid*, pp. 66-74 passim.

⁴⁶ H. B. Morse, *The Chronicles of the East India Company Trading to China vol. 1* (1926-29), p. 116-117. The tea trade with China had been building up since the end of the seventeenth century and had grown to some 12,736 tonnes in 1780. In 1784, the Commutation Act reduced the excise on tea. It had been set at £27.04 percent on Company sales and £28.75 percent on gross sales plus £0.05.75 per pound weight. The new tax was just 12.5 percent. See also: Tan Chung, "The Britain-China-India trade Triangle (1771-1840)" p.411 The growth in the China tea trade to Britain, through the reductions in duty brought about by the



Ports shown thus Basra, are the Main Asian and African Ports Visited by
Country Ships

They carried cotton and opium of western India and Bengal to China,⁴⁷ this and other legitimate items of trade

were sold openly through the Co-Hong, the group of Chinese merchants appointed by the Emperor. Opium, however, was banned by the imperial government and smuggled into China by the private ships; the Company controlled sales in the Sub-continent, but were not involved in the shipment of, or smuggling into China.⁴⁸

The Country ships were privately owned vessels operating between Canton and the ports of Calcutta, Bombay and Madras, they called at many Southeast Asia ports on both legs of the journey.⁴⁹ As already noted, the main cargo on the return leg was Chinese and Southeast Asian sugar, an indication of the extent of sugar in this trade can be gained from the early post monopoly period, 1817-18 to 1820-21, when the value of this sugar was £750, 398 on importation to sub-continental ports. Of this Bombay received £719, 062, most of this amount was white sugar, while Calcutta and Madras largely imported Chinese candy. Bombay's imports during this period were to the value of £647,156.⁵⁰ This sugar was worth 5 taels per picul in Canton,⁵¹ (133.3 pounds or 60.6 Kg) or £27.72 per ton. Based on these figures, Bombay imported 23,360 tons or 5,835 tons of Chinese sugar per annum during this period. During 1801-1839, the total value of imports from China to Bombay was Rs. 24,47,08,000. Of this total, silver

⁴⁷ W. H Coates, *The Old Country Trade of the East Indies*, (London, 1911) pp. 79-80; the largest single item of cargo carried from Bombay to Canton was raw cotton, other items were sandalwood, Olibanum, Putchock, Mynt, Asafoetida, Mother-of-Pearl, Elephant's Teeth, Shark's fins, Cornelians, False Amber, and Rose Madoes.

⁴⁸ Michael Greenberg, *Opening*, (1979) p. 9

⁴⁹ W. H Coates, (1911) pp. 84-93 passim, indicates that during the period 1790-1825 about one third of the tonnage on the country trade was owned by Parsee and other Indian capitalists.

⁵⁰ *E I S. Appendix IV*, passim.

⁵¹ H. B. Morse, *Chronicles*, Vol. 11 p. 203, Vol. 111 p. 384, Vol. 1V pp. 100, 119, 140, 196, 249 and passim.

The latter were active between Manila and Madras, carrying a considerable trade in piece goods either via Sao Thome or via British Indian ports at the Company's discretion.⁵⁹ The small quantities of sugar for the period 1802-3 to 1808-9, shown in (Appendix 1, Table 3) as Manila sugar, were a product of this trade.⁶⁰

Another feature, which added to the complexity of intra-Asian trade during this period, was changing alliances. In 1807 for example, Portugal commenced hostilities with Spain, then under French domination. Britain and Denmark were also at war. Consequently, Tranquebar and Serampore were taken over by the British. The Portuguese were no longer able to enter the now hostile port of Manila and the Danish ships lost the protection of neutrality.⁶¹ From 1808, a new phase in the trading relationship between Britain and Spain began, when these nations became allies in the war against Napoleon. Consequently, in Asia, British and Spanish merchants embarked on a new era of trade co-operation between Manila and India. Spanish ships were free to take advantage of the Act of Parliament of 1797, which opened Indian ports to ships of all nations friendly to Britain.⁶²

Of the sugar imports to the major Indian ports from 1812-13, Chinese sugar was a major contributor, imports from the Dutch East Indies via Penang and Eastward also increased, as did those of Manila.⁶³ By 1812, Philippine sugar also became available in quantity, with 2,975 tons exported during 1813. By

authors suggest that British Indian Agency Houses had sufficient influence in Manila in 1803-4 to arrange for ships under the neutral Danish flag to load cargoes in Manila bound for Copenhagen.

⁵⁹ W. E. Cheong, "Changing the Rules," (1970), pp. 17-18.

⁶⁰ *E. I. S. App. IV*, p. 63.

⁶¹ W. E. Cheong, "Changing the Rules," (1970), p. 18.

⁶² *Ibid.*

⁶³ *E. I. S. App. 4*, p. 56

1818, this had increased to some 11,884 tons.⁶⁴ Having a value of £20 to £37 per ton,⁶⁵ it too was a profitable ballast cargo on the Manila-Madras route. There was a trend from 1807 to 1821 of increased amounts of good quality sugar arriving in Indian ports from other regions of Asia. Some of this was re-exported to Britain, an occurrence that had repercussions in Britain where it came to the notice of the West India lobby (chapter 2 below).

The imports of sugar from Asian producers are indicative of the difficulty faced by the Company in its efforts to promote sugar production in Bengal; they acted as a disincentive to domestic production and restricted the growth of Bengal sugar in the markets of the other two presidencies. Without a stable and sustained market growth, there was little encouragement for cane cultivators or for the improvement of the quality of sugar.

Indian Sugar Exports and the Commercial Economy of Freight.

One of the most serious impediments to the East India sugar trade can be seen by examining the commercial economy of freight. The cost of war and the India monopoly and the operation of ships between Britain and the sub-continent, proved to be a significant impediment to the growth of the sugar trade. The cost and inefficiencies inherent in monopoly ensured that sugar exports from India were by no means all carried in ships chartered by the East India Company, or exclusively in British vessels. Actually, ships from America and Denmark carried East India sugar several decades before our period and continued to do so until 1812 and 1807 respectively. Vessels from other nations, although on a smaller scale, were also involved: Imperial Austria, Portugal and Spain, the latter two

64 W. E. Cheong, "The Decline of Manila as a Spanish Entrepot in the Far East, 1785-1826: Its Impact on the Pattern of Southeast Asian Trade," pp. 142-158, *The Journal of Southeast Asian Studies* Vol., 2, No., 2 (September, 1971), p.146.

nations arriving in increasing numbers from 1808, after the two countries broke free of French domination. British vessels also came under a variety of headings; but were all subject to the Company's monopoly until 1813, but not in an equal manner. Consequently, they should also be considered in their various categories; East India Company's regular ships armed and purpose built for the East Indies trade, Company chartered extra ships from 1802, ordinary merchant vessels, either lightly armed or unarmed, India built ships, privately owned vessels built and registered as Indian not British vessels, usually prohibited from the India to Britain route. These vessels operated with a degree of freedom between 1796 and 1802, and in a limited capacity until the end of the monopoly.

During the period 1792-1814, sugar was not always carried purely as stabilising ballast. When the price was high in Europe, it served at once as ballast and a profitable cargo and, as a means of remitting capital of British merchants home. Between 1792 and 1799 when it was profitable in its own right, private merchants used India built ships or neutral vessels to carry sugar to London and to European ports. After a dramatic fall in the value of all colonial products in late 1799, through to the cessation of the India monopoly, it served primarily as a ballast cargo to stabilise ships lightly loaded with spices, rolls of silk, silk and cotton piece goods and other Asian commodities. An explanation of the different channels through which sugar was exported from India and the cost structure of each, will substantiate the argument that the combined effect of monopoly and war, 1793 to 1815, contributed significantly to the failure of East India sugar to become a major export commodity.

⁶⁵ *Ibid.*

The Company's initial exports of East India sugar to Europe 1791-3 coincided with negotiations on the India monopoly, the renewal of which was bitterly opposed by private English East India merchants particularly those in Calcutta. It was here, far from the reality of the British capital, where the merchant community confident the charter would be terminated or substantially eased in 1793, invested heavily in Indian products in readiness to exploit the new commercial environment.⁶⁶ Events in Europe, however, swung the argument in favour of the status quo. By late 1792, with the French invasion of the Austrian Netherlands underway, it had become obvious in London that war between the two nations was inevitable.⁶⁷ The coming of war encouraged the Pitt government, in need of ships, sailors and finance to prosecute the war, to renew the monopoly. The grateful Company rewarded the government by providing all three.⁶⁸ Pitt and his cabinet were obviously not prepared to countenance radical change to Asian trading policy while the nation was at war.

This outcome left merchants in Calcutta with much capital tied up in goods, the main avenue through which to turn this stock to capital was via the Company's expensive Indiamen. Consequently, they sought cheaper avenues to ship cargoes and repatriate capital to Europe, neutral vessels and India built ships offered this alternative. Neutral vessels were a solution to some of the more irksome restrictions inherent in the India monopoly: in that they allowed some freedom in the manner in which merchants loaded vessels, cheaper freight costs and avoided delays caused by convoys.⁶⁹ The East India Company, for its part, allowed remittance of capital through Company bills based on the value of

⁶⁶ Ole Feldbaek, "Danish Asian Trade" (1997), p. 309.

⁶⁷ S. T. Bindoff, *The Scheldt Question to 1859*, (London, 1945), pp. 144-5.

⁶⁸ C. H. Phillips, (1961), pp.87-88.

cargoes being shipped home under the terms of the monopoly. Their purpose in this was to encourage reinvestment of capital earned in India within the Company's Indian territories.

Although some easing of monopoly restrictions had been incorporated in the terms of renewal of the charter of monopoly in 1793, i. e. private merchants were allowed 3,000 tons of cargo space per annum in the Indiamen. However, this easing of restriction was not seen as sufficient and merchants sought ways to circumvent monopoly restrictions. Even before the 1793 concessions, in fact from 1785, they had been actively achieving this by shipping cargo via foreign vessels. In Danish ships sailing initially from Tranquebar, or Serampore from the mid 1790s, and American vessels sailing from Madras, Bombay and Calcutta, sugar became a major trade commodity, as profitable ballast or main cargo, the latter during the 1790s, a period of peak demand and high prices in Europe.

Danish involvement in the remittance trade was reflected in the large rise in value of Danish cargoes from India, 1793-97. In the five years preceding 1793, the total value of Danish cargoes landed in Copenhagen was rix dollars 2,906,672. The next five year period, 1793-1797, saw an increase to rix dollars 8,331,437. From 1798 to 1802, however, the value fell to rix dollars 2,132,004,⁷⁰ a period during which the British increasingly intercepted Danish cargoes, challenging their neutral status, particularly those from Batavia. The period also includes the short Peace of Amiens during which neutral status did not offer the same level of advantage. Sugar represented 13 percent of total Danish cargo, or rix dollars 275,500t.⁷¹ During the three-year period January 1795 to May 1798,

⁶⁹ Ole Feldbaek, "Danish Asian Trade," (1997), p.309.

⁷⁰ *Ibid*, Table 4, p. 308

⁷¹ *E. I. S. App. IV*, p. 37.

some 5,150-ton of fine Bengal sugar financed by British residents was shipped to Copenhagen and Hamburg. The officials of the Company in Calcutta, aware of the scope of this quasi-legal trade: "supposed [these cargoes] to be principally on account of British subjects residing in Calcutta"⁷² but did nothing in practical terms to prevent the trade. Between 1795-6 and 1800-01, some 24,667 tons of sugar left British Indian ports bound for Copenhagen with 21,257 tons going to Hamburg.⁷³ From 1793 to 1807, twenty-eight ships of the Danish Asiatic Company sailed from India; the main component of their cargo until 1800 was Indian piece goods, *khandisari* sugar, redwood and saltpetre was carried as ballast. During the same period fifty-seven private ships, generally small and swift vessels able to avoid the British navy also sailed from India to Europe.⁷⁵ These vessels were free to carry cargo of any description; sugar prices were buoyant in Europe throughout the period, ensuring that sugar featured as both a profitable commodity and ballast.

The Americans in the Remittance Trade.

American ships engaged in the East India trade operated on a free-lance basis, carrying any cargo that would show a profit. Protected by the neutrality of the American flag from 1793 to 1812, their involvement in the remittance of the funds of British residents in India was larger than that of the Danish. The first American vessel, appropriately named the *United States*, visited India in 1784

⁷² *Ibid*, p.39.

⁷³ *Ibid*, These figures are based on tables of sugar exports pp. 66-67, and on sugar prices per ton calculated from figures in Appendix IV pp. 37-39 passim.

⁷⁴ P. P. (1812-13) (150), VIII.395: Extracts of the External Commerce of Bengal 1795-6, (1796) p. 3. An additional advantage derived from this trade was the enhanced exchange rate between sterling and the rix dollar.

⁷⁵ Ole Feldbaek "Danish Asian Trade, (1997) pp. 308-311 passim.

and by the 1790s American ships were a familiar sight in British Indian ports.⁷⁶ Prior to the ratification of the Jay Treaty in 1796 their reception, although friendly, was on a grace and favour basis.⁷⁷

Between 1796 and the war of 1812, East India Company and shipping interests in Britain protested strongly at the Americans' wide interpretation or the spirit of the treaty. The British government, however, did not insist on the strict implementation, having no wish to antagonise the United States while Britain and France were at war. The government was aware that British courts had a tendency to give a wide interpretation of the Jay Treaty when cases of American breaches came before them.⁷⁸ This situation offered considerable advantage to American merchants and an opportunity to British residents looking for an avenue for capital remittance.

American involvement in trade in and through India increased considerably during the 1790s, as did the agitation in London for a stricter interpretation of the treaty. The East India Company, for example, made strong representations to government. Charles Grant and Edward Parry, deputy chair and chairman of the Company, contended that the American ships were carrying goods from India that rightly belonged in British vessels, such goods being the property of British merchants.⁷⁹ The Americans for the most part actually operated within the terms of the treaty; in effect, they were providers of shipping and warehousing service for British merchants. Little of the East India sugar they brought to the American

⁷⁶ Holden Furber, "The Beginnings of American Trade with India, 1784-1812," *The New England Quarterly*, (June, 1938), pp. 235-265, p. 235.

⁷⁷ G. Bhagat. *Americans in India 1784-1860*, (New York, 1970), pp. 28-29. The Jay Treaty offered America access to Indian ports on the basis all exports from India would go direct to the east Coast of America not to European ports, the coasting trade around India being excluded. The key clause in this treaty for the British was article xiii; this stipulated that American ships would not have direct access between Indian and European ports.

⁷⁸ Holden Furber (1938), pp. 247-262 passim.

east coast was consumed in America, but was transhipped to European ports. The volume of American exports of Indian or re-export of Asian produce from India was considerable. In 1795-6, the value of these exports was £243,625 and by 1803-4, this had risen to £845,000.⁸⁰ Sugar exports from Calcutta to America during this period had a value of £504,358.⁸¹ Grant and Parry claimed the extent of sugar exports in American vessels from all British Indian ports to be £606,625.⁸² American records show similar amounts entering the USA, some 21,909 tons of sugar being imported from the British East Indies (Appendix 1, Table 6).⁸³ Fine sugar in India at this time cost around £30 per ton.⁸⁴ By multiplying this value by the American imports, East India sugar to the value of £657,270 was imported into the United States, 1795-1804. During the same period a total of 249,831 tons of brown sugar and 72,422 of loaf, white clayed sugar and sugar candy was also imported into America from all sources (Appendix 1, Tables 5 and 6).⁸⁵ Between 1800 and 1807 some 514,670 tons of sugar were imported, 418,261 tons of muscovado and 96,458 of loaf, sugar candy and semi refined.⁸⁶ Total exports from America for the same period were some 322,446 tons, nearly all of it foreign muscovado or equivalent.⁸⁷ The annual average consumption was some 20,032 tons; consequently, little East India sugar was actually consumed in the USA. Virtually all imports on American

⁷⁹ *Ibid*, p. 259.

⁸⁰ Home Miscellaneous, Volume 494, Copies of letters from Grant and Parry to the full Court, October 14th 1807 and October 1808, Cited in *Ibid*, p. 258.

⁸¹ *E. I. S.*, App. IV p. 66.

⁸² Holden Furber, (1938), Note 74, p. 262. Sugar exports amounted to 500,000 Sicca rupees for the period 1796-1803 and Sr. 853,000 in 1803-4.

⁸³ *The World's Sugar Production and Consumption Showing the Statistical Position of Sugar at the Close of the Nineteenth Century: From the Summary of Commerce and Finance for November 1902, U.S.A. Bureau of Statistics*, (Washington 1903). pp. 1366-7.

⁸⁴ *E. I. S.*, Appendix 1, passim.

⁸⁵ *The World's Sugar Production and Consumption*, (1903) p. 1,366.

⁸⁶ *Ibid*, pp. 1365-66.

⁸⁷ *Ibid*, p. 1379.

ships were fine *khand*,⁸⁸ a sugar in demand in Europe.⁸⁹⁹⁰ High demand and firm prices, ensured fine East India sugar was treated in accord with the terms of clause xiii of the Jay Treaty. If this sugar as Grant and Parry insisted, was the property of British residents, then merchants could hardly be blamed for using American ships at a time when the East India Company was insisting on the letter of the law with regard to the India monopoly.

The opportunity American ships presented to circumvent monopoly, was the cost advantages of their neutral status, cheaper insurance and lower freight rates. One advantage, consequent on the sugar being the property of British residents, was access to the network of British merchants and brokers in India.⁹¹ This network ensured cargoes were available for loading when American ships arrived at the port,⁹² reducing demurrage and delay, an event that came to the notice of British shipping interests as early as 1791.⁹³ Neutrals could sail when ready, instead, as was the practice of Indiamen, waiting until the fleet of Indiamen were loaded or a convoy assembled. An additional advantage was their smaller

⁸⁸ *E.I.S.* App. 1 p. 100, Bengal Board of Trade Consultations 4-9-1792.

⁸⁹ Curtis P. Nettels, *The Emergence of a National Economy, 1775-1815*, (New York, 1962). p. 235. During the period, 1790-93 the value of American re-exports rose from \$539,000 to \$2,110,000. In 1794, it rose to \$6,526,000, 1796 \$26,300,000 and peaked in 1806 at \$60,283,000. For the fifteen year period 1793-1807, the total value of all re-exports was \$493,000,000, giving an average per annum for the period of \$32,800,000.

⁹⁰ Seymour Dreyscher, (1977), p. 130. An example of the extent to which sugar prices were enhanced in Europe is evident in Holland. Before the French invasion of the Netherlands in 1795, sugar prices in Amsterdam were lower than in London. During 1797-1800, and 1804-06, both periods of hostility, they were 40 percent higher.

⁹¹ P. P. (1812-13) VIII.393. *Extract of the External Commerce of Bengal 1799*, p. 9. The officers and crew of the American ships, according to this report, were extremely industrious and very well organised in making financial arrangements with Indian brokers, pressing piece goods into bundles and arranging for sugar to be stowed in the bottom of the hold while the lighter cargo was being baled ready for loading. They were, by their industry and organisation, able to load and sail in 20 to 25 days.

⁹² C. Northcote Parkinson, (1937), p. 359. The supercargoes of American ships were able to arrange with either Company officials or private merchants in Calcutta, to transact their business via bills payable in London. British residents usually financed these cargoes; the Americans in such transaction were just the shippers of cargo.

⁹³ *A Series of Debates*, (1793), p. 208. "A Meeting of Consumers of Sugar at the New London Tavern Cheapside, December 15 1791." Mr Paul Le Messurier MP told the meeting that American ships were able to overcome delays in Calcutta because their agents had cargoes ready to load when the ship arrived.

size and shallower draught. Unlike the large Indiamen, they were able to load at virtually any port. At Calcutta, for example, small ships could be loaded at the wharfs of the inner harbour by cheap coolie labour;⁹⁴ Indiamen with deeper draught were loaded from lighters at Cox's harbour nearer the sea. According to Company records, these lighters were manned by expensive European labour.⁹⁵ Sugar loaded at the inner harbour cost £0.08 per ton to load, at Cox's harbour £0.58 per ton.⁹⁶

Clearly, American ships had a cost advantage over their British counterparts on the Indian-Europe routes, as they did on Atlantic routes. Curtis P. Nettels cites a report of 1805 which compared the cost of British and American vessels operating on a round trip between Britain and the United States. His example is of a 250 ton vessel: the American ship cost £513, its British counterpart, £1,083.⁹⁷ The cost difference for insurance premiums between neutral ships and those of belligerent nations was considerable. For example, sugar carried in British ships between the British sugar islands and northern Europe cost £9 per ton; the cost to Mediterranean ports was £12.50 per ton. On the direct route West Indies to Britain, the cost per ton, inclusive of freight insurance and other mercantile charges, was £8.50 in 1791-2, a

⁹⁴ William Milburn, *Oriental Commerce: Or the East India Traders Complete Guide*, (London, 1825). pp. 278-9. Ships were allowed to tie up at the inner anchorage of Calcutta for a period of ten days. After this time had elapsed, they were charged an additional mooring or chain fee. During the months March to October, this fee was £1 per day, November to February the fee was £0.80 per day.

⁹⁵ *E.I.S.* Appendix 1 p. 57. The lighters were sloop rigged vessels owned by the Company, each had at least two Europeans as master and mate with the manual work performed by Indian labour.

⁹⁶ *Ibid.*, p. 51, Board of Trade Consultations 7 August 1792.

⁹⁷ Curtis P. Nettels, (1962), p. 235.

peacetime rate. From 1793 to 1806, this increased to £12 to £15 per ton⁹⁸, easing in 1802-3 to £10 per ton, during the short period of the peace of Amiens.⁹⁹

Insurance rates on British ships between Bengal and Britain were also high, as will be shown below. American ships through this period were able to carry freight at \$1 American per ton per month, or £11 per ton,¹⁰⁰ a clear cost advantage over British owned and operated vessels. Prior to closure of Ostend in 1793, American ships leased by British merchants developed a brisk trade in sugar and other Indian goods. This direct route to European markets avoided the cost of trans-shipment in British ports and offered considerable savings to British merchants. For example, a sugar cargo of 800 tons carried in a British bottom and directed through London in accord with the British navigation laws cost an extra £22,817 in freight costs, commissions and additional insurance for the leg between London and Ostend.¹⁰¹

Table 111 below indicates the peak period when sugar became a commodity through which to remit capital was 1793-4 to 1807-8, and on a reduced scale until 1812 due to the embargo on British goods entering the USA, that President Jefferson forced through congress. The threat of the imposition of double duties from 1811¹⁰² and in 1812 war between Britain and the USA brought this trade to a halt for several years.

⁹⁸ Selwyn H. H. Carrington, *The Sugar Industry and the Abolition of the Slave Trade, 1775-1810*, (Gainesville FL, 2002). P. 271 Table 10.5 indicates that insurance cost as a percentage of gross earnings in the West Indian trade rose from 2.12 percent in 1792 to an average of 12 percent in the year 1795-1798.

⁹⁹ Sir William Young, *West India Common Place Book 1807*, in *E. I. S. Appendix 3*, p. 129. The rate per long ton for 1793-4 was £12, 1795-6 was £12.50, 1797-8 £13, 1799-1800 £13.50, 1801-2 £14, 1804 £14, 1805 £14.50 and 1806 £15 per ton.

¹⁰⁰ *Bengal Sugar: An Account of the Method and Expense of Cultivating Sugar Cane in Bengal*, (London, 1794), p.p. 13-14.

¹⁰¹ *Ibid*, pp. 9-10.

¹⁰² Amales Tripathi, *Trade and Finance in the Bengal Presidency 1793-1833*, (Calcutta, 1956), p. 110. Company directors ordered the government in Bengal to impose double duties on all foreign ships in 1808. This order was not applied to customs duties in India until the East India Court reaffirmed the order in 1810.

Table 111 Sugar Exported from Indian Ports in American Vessels 1795-6-1819-20

Year	Value	Est. tons	Year	Value	Est. tons
1795-6	£16,088	534	1805-06	146,210	5,540
1796-7	41,793	1,666	1806-07	121,850	4,841
1797-8	65,117	2,704	1807-08	34,765	1,360
1798-9	213,575	9,725	1808-09	2,046	119
1799-00	82,417	4,704	1809-10	11,914	379
1800-01	68,831	3,173	1810-11	4,444	190
1801-02	38,926	1,785	1811-12	4,295	192
1802-03	63,173	3,221	1812-13	7,046	305
1803-04	106,664	3,645	1813-14	Nil	
1804-05	82,035	3,165	1814-15	Nil	¹⁰³

The estimated tonnages are arrived at by converting sicca rupee values in the original records @ 8 to the pound sterling, this total is divided by the average price paid by the Company FOB Calcutta as shown in table 1 above.

From the late 1780s through to 1793, the main European ports receiving East India goods in neutral ships were Ostend, Hamburg and Copenhagen. Ostend closed in early 1793; Copenhagen remained a major outlet until 1800, but diminished gradually until 1807 when the trade ceased with the onset of war between Denmark and Britain. The Orders in Council of 1807-9, calling on all neutral shipping trading with Europe to proceed via British ports where they paid British import duties, were the principle cause of the falling off of sugar shipments in American vessels and a major contributor to the hostilities of 1812.¹⁰⁴

Grant, Parry and many Directors of the Company opposed the American exploitation of article X111 of the Jay treaty, but this trade offered British India an avenue into Europe during the difficult period of trade embargo, particularly in the early years of the nineteenth century when British warehouses were filled with Asian goods. As pointed out in chapter two below, it boosted British coffers by facilitating capital exchange when the value of these goods filtered through the European mercantile traders and bankers back to London. The *khandisari* sugar sold in many European markets helped to establish a market niche that could

Not until 1811 were customs regulations fully in place to enforce these instructions, by which time the Anglo-American conflict had reduced American trade with India to practically nil.

¹⁰³ *E. I. S. App. IV* pp. 66-72

have grown after 1815, but this opportunity was not exploited fully. The blame for this was, in large part, due to the land and economic policies of the Company government (see chapter four below).

British Ships in the Sugar Trade and the Economic Impact of War and Monopoly.

In chapter two below, the impact of duties on the East India sugar trade will be fully discussed and it will be shown that the impact of these was not crucial until 1814. The following section of this chapter, however, will argue that the cost brought about by war and the India monopoly actually contributed more significantly than the duty regime to the failure of East India sugar to gain a larger share of the British market.

The nature of sugar exports from India to Britain bore little similarity to most other Asian commodities; carried primarily as ballast, it did not offer the same scale of profits as silk, indigo, spice, drugs¹⁰⁵ or until the early nineteenth century piece goods. As mentioned above, only during the period 1793-99, when sugar prices in Europe were high, was profit from sugar as main cargo possible. Because sugar was a commodity utilised primarily as stabilising ballast, has led some historians to believe that it incurred little transportation cost. Their argument would be along these lines; ballast was a standard requirement in sailing ships, thus sugar as a replacement for ballast such as stones or redwood, should not be calculated in the cost structure of freight. S. Dreyscher (1977) and

¹⁰⁴ Anthony Webster, "The Political Economy of Trade Liberalisation: the East India Company and the Charter Act of 1813," pp. 404-419, *Economic History Review, Second Series*, Xliii 3, (1990), p. 405.

¹⁰⁵ One of the major items listed as drugs was Asian rhubarb: for detail on this plant and its value as a drug see G. R Porter, *The Tropic Agriculturist*, (London 1833), pp 396-402; see also Michael Greenberg, *The Opening*, (1979), p. 54. Drugs in East India Company records refer to rhubarb, cassia, camphor but not opium. George Dodd, *The Food of London*, (London, 1856). p. 399 also lists some articles classified as drugs in 1856, such as gum, opium, scammony, colocynth, mastic, asphaltum, bark, castor oil, senna, Camomile and aloes.

Shahid Amin (1984) both concluded that sugar incurred only minimal freight cost,¹⁰⁶ while K Achaya's opinion is that it incurred no cost at all.¹⁰⁷ A close reading of charter arrangements and the audited Company accounts, may throw some light on the actual cost of sugar shipments.

The deliberations of the Committee of Private trade in January 1807 a body setting the charter rate of regular ships, fixed this rate at £44 per ton full burthen. This price included kentledge (permanent iron ballast), war contingencies, convoy duty and war time insurance.¹⁰⁸ A typical ship chartered for the coast and bay, Britain to Calcutta via Madras, averaged around 750 tons burthen, with 92 tons of kentledge. When chartered at full burthen tonnage, the basis of the charter was £26.50 per ton, with kentledge plus other contingencies costing an additional £5-6 pounds per ton, an actual charter cost per ton of £31 or £1.55 per cwt for all cargo.¹⁰⁹ This is borne out by Company's freight records for 1804-08, which shows the percentage cost per ton of heavy freight to be higher than lighter commodities; Bengal silk on regular ships was 3.30 percent, piece goods 9.41, sugar 71.36 and saltpetre 72.29 percent.¹¹⁰ The audited cost of ballast cargoes on Company ships was extremely high. For example, during the period 1793-4 to 1809-10, 24.752 tons of saltpetre was loaded in India to fulfil the contract with the Board of Ordinance, freight costs inclusive of all mercantile charges came to £59.41 per ton.¹¹¹ The 63,320 tons of sugar shipped to Britain in Company

¹⁰⁶S. Dreyscher, (1977), p. 179, and Shahid Amin, *Sugarcane and Sugar in Gorakhpur*, (Delhi, 1984), pp 15-16.

¹⁰⁷K. Achaya, *The Food Industries of British India*, (Delhi, 1994), pp. 25 and 32.

¹⁰⁸*Select Committee on the East Indian Company's Affairs 1811-12 Appendix IV*, evidence of John Bebb, Director of the East India Company, p. 99.

¹⁰⁹*E.I.S App.* 1 p. 56, Board of Trade Consultations, 7 August 1792.

¹¹⁰*Select Committee Affairs*, 1811-12, pp. 137-8.

¹¹¹*Ibid*, Appendix IV, p. 50.

Indiamen and extra ships 1791-1811, cost in a range £17.86 to £81.94, or around £34 per ton.¹¹²

The use of sugar as a ballast diminished 1793-1815, due to additional demand for saltpetre on both regular and extra ships. Peak demand for saltpetre came between 1805-6 and 1809-10, when an average of 2,844 tons was shipped to fulfil Board of Ordinances needs. The much higher figure than during the previous five-year period, when an average of 718 tons were loaded,¹¹³ a reflection of the state of conflict in Europe. Ballast carried on ships loaded with light Asian cargoes was usually a ratio of 5 tons of light cargo to three of heavy or ballast cargo.¹¹⁴ This ratio in an eight hundred-ton regular ship, usually loaded with 92 tons of kentledge, called for 220 tons of ballast. The seasonal fleet of 14 regular ships varied between 500 to 1,200 tons per ship and an estimate of their annual ballast requirements was around 6,000 tons, which included 1,300 tons of kentledge. The annual average of 2,844 tons of saltpetre during this period left 1,856 tons available for sugar or grain per annum. With a few India built ships and some extra ships on the Company's India to Britain route, it is impossible to give an accurate figure, the period 1807 to 1815, however, saw total sugar cargoes of 19,477 tons or an annual average of 2,160 tons. There was little, if any profit in ballast cargoes, sugar was possibly cheaper to handle than saltpetre, but the Company's saltpetre contract with the government ensured saltpetre had preference over sugar.

The cost structure of chartering indiamen was a relic of earlier days when large profits were made on virtually every voyage and the type of ballast used

¹¹² *E. I. S., App. IV, p.34.*

¹¹³ *Select Committee Affairs, 1811-12, Appendix IV, p. 500.*

¹¹⁴ Zachary Macaulay, (1823) p. 98.

was not considered a cost input. These charter arrangements, however, were not economically viable by the 1790s, and even less so during the long conflict 1793 to 1815. With the India monopoly no longer returning profits, all cargo, ballast or fine, was factored the economy of East India freights. Therefore, sugar and saltpetre were usually loss-making cargoes detracting from the bottom line.

The issue of sugar ballast and its freight cost was again raised in 1823, on this occasion by Huskisson, President of the Board of Trade.¹¹⁵ Huskisson was actually referring to privately owned ships rather than chartered Indiamen. He understood that ballast cargo was essential to the operation of ships on the India-Britain route where ships carried predominantly light cargoes, but he seemed to believe that these cargoes could be shipped at little or no cost. He failed to take into account several factors: the cost of the initial purchase, usually high (chapter 7 below), the cost of loading and unloading, losses through deterioration during the voyage, agents' fees and insurance. When other heavy cargoes such as rice or saltpetre were available, the ship owner or his agent took a commercial decision as to which ballast or "gruff" cargo would offer the best profit or, as was often the case, sustain the smallest loss. The ship owner incurred operational costs irrespective of what was under the hatches. It is true that sugar was frequently shipped at lower rates than light cargo, but it still incurred freight costs.

The cost of shipping, as has already been discussed, encouraged merchants to find alternative and cheaper means of exporting commodities to Europe, neutral vessels were the cheapest of these alternatives; a factor recognised by the Company. In 1796, in response to this threat, the Company allowed a limited number of India built ships to carry cargoes from India to Britain.

¹¹⁵ Hansard's *Parliamentary Debates* Vol., IX (1823), p. 466.

Company's manifests. Such ships, however, were exposed to high wartime insurance, with up-front freight costs in India of seventy-five percent.

Merchants criticised the cost of monopoly in the early 1800's, but as Amales Tripathi points out, the Company was quick to point to war and the irregularity of voyages occasioned by war as the cause of high freight costs. They also argued that the alternative, the India built ships, were not significantly cheaper, due in part to the profit some of their accusers, private merchants, who as directors of insurance companies, were the beneficiaries. These merchants had gained from significant increases to premiums; and the Company accused them of *mulcting* the private trade from India.¹²¹ Freight cost on the Company's regular ships, as opposed to the India built ships, was not paid by the merchants until the goods were sold in England. In addition to high insurance, the up-front payments in India effectively increased costs by 2-3 percent. The average cost per ton 1802-8 for India built ships, was £21.50. British built extra ships, when available, were chartered by the Company at £16.09 per ton, this was the minimum, and the rate was usually higher, regular Indiamen cost £30.85 per ton.

¹²² Conflict between the Company and private merchants from the late eighteenth century until the end of the India monopoly was constant, the shortage of shipping caused by its restrictions was chief among their complaints.¹²³

Other factors also contributed to the high cost of freight. For example, the outfitting of a 500-ton Indiaman in the 1790's cost £41,785 and a 1,200-ton cost

¹²¹ Amales Tripathi, *Trade and Finance*, (1956), p. 108.

¹²² *Select Committee, Affairs* Appendix IV p. 82, evidence of Mr John Innes, East India merchant; and *Ibid* p. 87 evidence of Mr Richard Campbell Bazett, East India merchant. Bazett claimed that without the monopoly, ships could be provided at £28 to 30 for the round trip, or £8 to 9 out and £19 to 20 home.

¹²³ *Ibid*, Appendix 47, Supplement to the Report, p. 79-80. Evidence of Mr John Innes, private East India merchant, given March 6 1809. Innes complained of a variety of problems associated with monopoly restrictions, insurance and the way in which the slow payment by the Company of its bills on East India goods operated.

£64,124.¹²⁴ Another factor was the low cargo take-up on the outward journey to India, which from 1795 to 1802 was only 183 tons per ship. From 1802 to 1810 this increased to 1,359 tons per ship, still a mere fraction of available hold space.¹²⁵ The West Indian routes did not suffer from the latter since the opportunity for freight in both directions was much greater.¹²⁶ Convoy duties and the delays inherent in the convoy system also added to freight costs. Insurance costs were another serious problem. The Company claimed to save money by carrying its own insurance risk, but they incurred considerable losses of ships and cargoes through war and storm. From 1782-3 to 1809-10 over £1,027,209 of cargo were lost. On shipping routes between India and Britain, many ships were lost to privateers from the Isle de France until 1810 and off the coast of Europe until 1815.¹²⁷ Piracy, or the ability of a ship to repel pirates, contributed significantly to the long term cost structure of freight. All Indiamen and some extra ships were armed, which called for larger crews to man ordinance. Costs per ton in the Baltic, where shipping was free from piracy much earlier than many other routes, were significantly lower. On routes free from privateers, ships carried smaller crews, which resulted in a higher ratio of cargo tons per man.¹²⁸

With smaller numbers of ships visiting Indian ports in the early 1800s, the correlation between sugar, ballast and ship numbers became apparent. Between 1806-7 and 1813-14, American sugar exports from the sub-continent were much

¹²⁴ Russell Miller, *East Indiamen*, (New Jersey, 1980), pp. 148-50, for further details of East Indiamen and their operation see: J. R. Bruijn and F. S. Gaastra (eds.), *Ships, Sailors and Spices, East India Companies and Their Shipping in the 16th, 17th and 18th Centuries*, (Amsterdam, 1993). J. R. Bruijn, *The East Indiamen*, (Nedlands, 1987).

¹²⁵ *Select Committee, Affairs 1811-12, Appendix 47* p. 444.

¹²⁶ Douglas C. North "Sources of Productivity Change in Ocean Shipping, 1600-1850," pp. 953-970, *The Journal of Political Economy*, Vol. 76 (September/October, 1968), p.62.

¹²⁷ *E.I.S.*, Appendix 2, p. 16: In 1809-10 11 ships were lost, eight regular Indiamen and three extra ships.

¹²⁸ *Ibid*, pp. 959-60.

smaller than the earlier period, at £185,360 or 7,314 tons.¹²⁹ Imports of East India sugar to Britain for the same period were some 22,730 tons or around £568,000.¹³⁰ During the same period the sugar trade was thriving on the Asian trade routes. The Persian Gulf and Red Sea routes from Calcutta saw sugar exports worth £226,726; with Bombay exporting £373,501 to similar destinations. The sugar exports from Canton to Bombay, Calcutta and Madras amounted to £727,326; with total of Asian sugar exports to India worth £1,026,855. Although just one commodity in the intra-Asian trade, and carried primarily as a ballast, sugar was a valuable part of a thriving commerce that operated free of monopoly. In a period when Asian trade flourished, commerce between India, America and Europe stagnated.

The discussions of East India Company's various committees in the early to mid 1790s with regard to the sugar trade in and through India had something of a holistic nature. Sugar imports to Britain had not been the dominant feature, they understood the need to coordinate several other factors: these were; Asian imports, promotion of cane cultivation and sugar manufacture, domestic replacement of imported sugar and the encouragement of sugar in the intra-Presidency trade. This did not eventuate. Such hopes foundered on policy changes in Bengal (Chapter 4 below), and the insistence of the "old ship owners," the dominant party in the East India Court from 1802, of full implementation of the monopoly. India built ships which offered a cheaper alternative to the expensively chartered Indiamen were virtually excluded, extra ships, more of which the Company had the right to charter, were not taken up in sufficient

¹²⁹ *Ibid. App. IV pp. 68-72.*

¹³⁰ P.P. 1821 1807-20 (442) XVII.178 1823, 1822 XVIII.579 Accounts of Sugar Imported and Exported from GB, and the Amount of Duties Received.

CHAPTER 2

The British Sugar Market and the Political Economy of East India

Sugar 1792-1836.

In this chapter the discussion moves from South Asia to the British home and re-export market to examine the difficulties encountered by East India sugar importers, explaining that in addition to high freight costs and shortages in cargo capacity caused by war and monopoly, other factors domestic to Britain also limited the market opportunities of East India sugar. Prominent among these were the activities of the West Indian lobby, a body comprised of planters, merchants and members of the body politic sympathetic to the cause of the British Caribbean sugar colonies. This lobby sought to maintain the dominant role of West Indian sugar in the British market by the continuation of sugar duty legislation, which for much of this period discriminated in their favour. West Indian planters also believed they had an exclusive right or "charter of monopoly" to import sugar into Britain by virtue of their long established supply and the restrictions the British Navigation Laws placed upon their trade. The response to these activities of the East India Company, East India merchants and their representatives in parliament is also an ingredient necessary to the understanding of the political economy of sugar during this period. As will be shown, efforts by the West India lobby to contain East India sugar imports did not cease when the India monopoly ended in 1813; the campaign continued until just before equalisation of East and West Indian sugar duties in 1836. The "charter of monopoly", perceived or real, remained immovable until 1825, when quite suddenly the government allowed sugar from the Indian Ocean island colony of Mauritius to enter the British home market at the same duty as West Indian. Contemporary with this change, a

gradual movement toward free trade gathered pace until it became the dominant theme of British economic policy in the 1840s.

During the 1830s, concern was growing over the ability of the West Indies to supply the British market, due to labour shortages and increased production costs brought about by slave emancipation. Consequently, by 1836 with West Indian planters in receipt of compensation for emancipated slaves and legislation in place that freed them from some of the worst aspects of the British Navigation laws, the mood of the British body politic changed. Sugar produced in Bengal and some other British possessions in the East Indies entered the British home market paying "British plantation duty" equal to that of the British West Indies and Mauritius.

Specifically I will argue five major points: one, that despite efforts by the West Indian lobby to exclude the sugar of the East Indies from Britain, this sugar found and maintained a niche in the British home and re-export markets. Two, an explanation of the duty regime as it affected East Indian sugar, will show that although detrimental, it was not a significant factor until 1814. The duty, when paid on a strict ad-valorem basis from 1792 to 1800, added significantly to its cost, however, during the years 1800–1809 the actual duty differential was small. Three, the East India Company, influential in the British body politic during much of the eighteenth century, was unable or unwilling to resist the West Indian lobby in their efforts to maintain a virtual monopoly of the British domestic sugar market, 1793-1822. Four, protection of the British sugar market in favour of West Indian sugar imports 1800 to 1836, was an integral part of British economic policy. This policy ensured that revenue requirements of the British exchequer and the economic welfare of the West Indies had an intimate linkage, in that the West Indies as a reliable source of sugar were, in effect, a generator of a significant

amount of import revenue. Consequently, any measure of relaxation to the protected West Indian product in favour of the East Indies, added an element of risk to revenue receipts. Fifthly, and indicative of the complex nature of the politics of the East India sugar trade, the British trade policy makers sought to bolster the West Indian economy by maintaining their virtual sugar monopoly, while at the same time attempting to make concessions sufficient to facilitate the economics of East India shipping, 1823-1836.

***Khand* and the Establishment of a Niche Market.**

The market for sugar in Britain and Europe was strong during the years 1792-1799, but as will be shown in chapter 4 below, sugar manufactured by West India technology in European owned establishments and the cheaper raw indigenous sugars of the sub-continent referred to as *khaur, gur or jaggery*, were not usually profitable when exported to Britain. Fine *Khandisari* sugar, however, although not cheap at source, established a niche in the British market in the 1790s, in part at least, because as semi refined clean sugar it offered a cheaper alternative to refined sugar.

The high price of sugar in this period brought changes to consumer patterns that to some extent enabled *khand* to establish this niche. For example, in the period 1782-1791, the average price of best West Indian muscovado was £79 per ton; from 1792-1800, it increased to £86 per ton, an increase of 9 percent. At the lower end, however, low quality muscovadoes increased from £43.40 per ton in the first period to £63.20 in the second, an increase of 45 percent.¹ An accompaniment to the increase in the cost of sugar was that of increased import duties, as is shown in table 1V below and in detail in (Appendix 1, Table 9). These increases had little effect on the wealthy, they could still afford the very

¹ L. J Ragatz, *Planter Class*, (1928), Chart 21 p. 358.

Table IV Duty Paid by West Indian Sugar 1790-1799.

Table I	Duty per Ton Musc.	Duty per ton Refined	Duty per Lb Musc.	Duty Per lb Refined
1790-6	£15	£100	0.66 pence	4.46 pence. ²
1797	£17.40	£100	9.77 "	Ditto
1798	£19.40	£100	0.86 "	Ditto
1799	£20	£100	0.89 " ³	Ditto

expensive refined or better quality clayed sugars, but some sections of the community, those whom contemporary's called the middling sorts, turned to cheaper sugars, while the working poor had no alternative but to reduce consumption. Even the wealthy would experience some change: instead of white refined sugar, raw or muscovado sugar began to be part of the recipe in food preparations and conserves, apparently with little or no difference in taste⁴.

In this high price environment, an ideal market opportunity existed for a sugar that was pale in colour, clean and dry but cheaper than expensive refined sugar. The *Khandisari* sugars of the sub-continent were just such a product, as was, although to a lesser extent, white sugar from China, Manila or Batavia re-exported via India 1815-1821. (These Asian sugars shared similar characteristics to *khand*, they were much cheaper than refined sugar, slightly cheaper than clayed West Indian and cleaner and whiter than West Indian muscovado). Along with the best of the West Indian muscovadoes, their place in sugar consumption was that of (direct consumption) grocery sugar. They were more expensive than the darker muscovadoes; for example, high quality *khand* had an average wholesale price of £85 per ton in the period 1794-1803 compared with £75 per ton for West Indian muscovado.⁵ It is also probable that *khand* displaced some of the white clayed West Indian sugar in the grocers' shops.

² Command Paper (8706) 1894, *Report of Customs and Tariffs*, p. 215.

³ Noel Deerr, *History*, Vol. 2 p. 430.

⁴ Anne Wilson, *The Book of Marmalade*, (Totnes, 1995), pp. 72-3. The high cost of sugar in the 1790s, led to muscovado replacing double refined in confectionery manufacture for the upper classes. Recipes using moist brown sugar make an appearance in the *Housekeepers Valuable Present (1800)*. The use of muscovado did not noticeably alter the taste or colour. It did, however, reduce the price and make them available to the middling sorts. By 1900, a common perception had arisen that marmalades made with moist brown sugar being traditional.

⁵ L. J. Ragatz, (1928), Chart 20 p. 350.

In the establishment of this market, *khand* received a measure of assistance from the sugar abstention campaign of the 1790s, part of the anti-slavery movement. The motivation behind this campaign was to give women an active role and a personal stake in a campaign aimed to bring about the emancipation of slaves in the British West Indies. The activists personally abstained and encouraged others to desist from consuming sugar grown in the West Indies by slave labour.⁶ Grocers, for altruistic reasons or for commercial advantage,⁷ began to stock the East India product, advertising it as a sugar made without slavery.⁸⁹ Thomas Clarkson, a leading advocate of abolition, claimed some 300,000 people as abstainers from West Indian sugar on his return from a tour around Britain in 1791-2.¹⁰ Apart from this obviously partisan source, there are no other known figures. However, by 1795, West Indian groups began to express concern about East India sugar: "[Although this sugar] very greatly exceeded in price the British plantation sugar, [it was] consumed voluntarily by the inhabitants of Great Britain."¹¹¹² By 1800, *khand* appears to have established its market despite the ad-valorem nature of import duty, its price 1796 to 1806, was £4 to £16 per ton cheaper than West Indian muscovado (Appendix 1, Tables 10 and 11). The finite sources, supply costs and low profit margins of the East India

⁶ Clare Midgely, *Women Against Slavery 1780-1870*, (London, 1992) pp. 35-39.

⁷ Hoh Cheung and Lorna Mui, "Andrew Melrose Tea Dealer and Grocer of Edinburgh 1812-1833," pp. 30-46 *Business History*, Vol. IX No. 1 January 1967, p. 43. In the 1790's, grocers began the practise of *tie-in* sale; this type of transaction offered the customer 3 pounds of sugar sold at cost price for every 1 pound of tea purchased. It is possible that some of the larger grocers purchasing both and sugar from East India Company were able to make a deal involving lower prices for sugar.

⁸ Clare Midgely *Women*, (1992), p.39

⁹ Lists of grocers stocking East Indian sugar during the 1790's are available in Durham Records, University of Durham Box 55, File 7, cited in P. F. Dixon (1971) p. 59.

¹⁰ Clare Midgely (1992), p. 38.

¹¹ P. F. Dixon, (1971) p. 60.

¹² Clare Midgely, (1992) p. 39. Pro-West Indian publications, such as *The Gentleman's Magazine* took issue with women involved in this campaign in its December 1791 and February 1792 publication. *The Times* in March 1792 printed a long letter complaining that merchant interests were offering support for the women, while at the same time purchasing cotton and other slave grown products.

trade, however, ensured this niche East India sugar established in the British market remained quite small.

East India Sugar and the Ad-valorem Nature of Sugar Duties

A changing and complex web of legislative measures constantly regulated the sugar duty regime 1790-1854 with the period 1792-1822 punctuated by changes. A complexity reflected in East India Company's chronicle of this period,¹³ which devoted almost three pages to the minutiae of legislative changes. This duty regime, as we shall see, effectively reduced the penetration of East India sugar in the home market. However, despite the disadvantages inherent in a complex system of duties, draw-backs and bounties designed to favour the West Indian product, *khand* was able to give West Indian clayed sugar a run for its money in the home and re-export markets.

Consumption in Great Britain 1801-1822 was of the order of 3,199,579 tons;¹⁴ 292,316 tons were of foreign origin, mainly from the sugar islands captured by Britain during the 1793-1815 war with France. The East Indies supplied only 125,248 tons or 4 percent.¹⁵ The lion's share, some 2,782,015 tons or 87 percent, came from the British West Indies (Appendix 1, Table 12). Yet despite the small extent of market penetration, East India sugar was subjected to a great deal of political lobbying from the West Indians, a reaction far outweighing its actual importance. From 1792 through to 1836, the subject of East India sugar occupied much time and attention of the body politic and the public. Many publications, petitions and endless speeches, often spoken in anger, emanated from groups opposed to or in favour of the admittance of East India sugar at the same duty as West Indian. This trifling four percent held the attention of the British body politic

¹³ *E.I.S. App. IV pp. 1-3.*

¹⁴ P.P. 1857, XXXVIII: *Accounts Relating to the Consumption of Tea and Sugar in the United Kingdom 1801-1856.*

in both houses of parliament and in meetings of extra-parliamentary bodies, until equalisation of duties in 1836 ended these acrimonious debates.

The emotive issue of slavery, particularly its more bestial side such as whippings and summary hangings, ensured any debate would quickly become highly charged with accusation and counter accusation. The West Indians, however, did not see themselves as monsters or abusers of human rights, but considered they were loyal citizens of the crown who had invested a great deal of capital in plantations which contributed to the greater good of the mother country.¹⁶ Their just reward for this investment was, in their opinion, the continuation of the right to be the sole supplier of sugar to Britain. They also believed the mother country was indebted to them for their loyalty during the American War of Independence and their adherence to the Navigation Laws. As Selwyn H. Carrington points out, the conflict between Britain and her American colonies damaged the West Indian economy by increasing the price of lumber and provisions.¹⁷

Their argument for continued protection on purely economic grounds was also strong. From the late seventeenth century, as the output of the plantations grew, the economies of Britain and the British West Indies became intimately linked. British manufactures were exported to the West Indies¹⁸ and vessels transporting these goods returned loaded with sugar, coffee, cotton and indigo.¹⁹ The West Indian colonists, however, frequently grumbled of the burdens imposed

¹⁵P. P. 1850, (280) LII.457, *Return of Quantities of Sugar Admitted for Home Consumption 1801-1849*.

¹⁶ In addition to other publications already cited, the following books were consulted with regard to British slavery and its abolition. David Turley, *The Culture of English Antislavery 1780-1860*, (London, 1991), Roger T. Anstey, *The Atlantic Slave Trade and British Abolition 1760-1810*, (London, 1975); Michael Craton, (ed.), *Roots and Branches: Current Directions in Slave Studies*, (Toronto, 1979), Suzanne Meirs, *Britain and the Ending of the Slave Trade*, (London, 1975), James Walvin, *Black Ivory*, (London, 1992).

¹⁷ Selwyn H. Carrington, (2002) pp. 44-54.

¹⁸ Eric Williams, *Capitalism and Slavery*, (New York, 1961), pp. 85-107 passim. The wealth of British West Indian planters accumulated through their sugar plantations, gave them entrance into the upper echelons of British society and access to influential people during the eighteenth century.

by the Navigation Laws and strengthened by the Prohibitory Act forbidding trade between the sugar island and the now independent American colonies.²⁰ The former, which came into being in the seventeenth century to curtail Dutch penetration of the British mercantile trade, compelled the British colonies to ship their produce to British ports in British bottoms. Another impediment to the efficiencies of sugar production was the ban on the refining at plantation level-- itself a product of an earlier dispute between planter interests and British sugar refiners. The export to Britain of clayed sugar had continued unaffected,²¹ but by 1800, the raw muscovado was the predominant import (see Appendix 6 for the process of claying). Consequently, the practice of shipping raw sugar in hogsheads instead of sacks or boxes became the usual means of stowage; an uneconomic practise that led to the loss of ten to fifteen percent of bulk through the drainage of molasses during the voyage.²²²³ Hogshead, as containers were also a poor utilisation of cargo space. The vessel *Houghton le Spring* illustrates this inefficiency. On a voyage from St. Kitts to London in 1847, the vessel carried 443 tons of sugar in hogsheads: on a voyage from Pernambuco to London, on this occasion loaded with sugar in bags, the vessel could carry 520 tons. An additional cost impost was the high turn around time for ships loading cargo in the West Indian islands as compared with Brazilian and Cuban sugar ports. In the latter, the delay was of the order of 14 to 21 days, but in many British West Indian islands, where ports were little more than open sea roads, the turn around time was from

¹⁹ *Ibid*, p. 53. In 1790, Pitt assessed the annual income of Britain from the West Indian plantations at 80 percent of British overseas earnings.

²⁰ Selwyn H. H. Carrington (2002), p. 2. The Act came into force December 1775, proscribed the movement of goods between the British sugar islands and the American colonies.

²¹ Noel Deerr *History*, Vol. 2 (1950), p. 430. Duty paid on refined sugar entering Great Britain 1787-91 £4.93, 1791-96 £5.02, 1797 £5.09, 1798 £5.15, 1799-1802 £5.18, 1803 £6.72, 1804 £7.42, 1805 £7.56, 1806 to 1836 £8.40.

²² W. J. Evans, *The Sugar Planters Manual*, (London, 1847), p.214.

²³ P. P. *The Select Committee on the Distillation of Sugar and Molasses*. Fourth Report 1808 IV, p. 318. The ban on refined sugar from the West Indies led to the transportation of sugar in hogsheads as undrained

70 to 100 days.²⁴ The Navigation Laws were a serious impediment to the island colonies, but Eric Williams's view that this legislation kept the British West Indies in a state of "permanent vassalage," is too extreme,²⁵ the Acts, however, were a restriction on trade.

The proposed entry of East India sugar to the British market in the early 1790's could not have come at a worse time for the West Indian planters. After two decades of depression, sugar prices had substantially increased; this promised a return to the prosperity of earlier in the century.²⁶ The improvement is clearly reflected in British import figures: West Indian sugar, as a proportion of total British imports, rose from 14 percent in 1788 to 23 percent in 1791, surging to 32 percent in 1792.²⁷ With this high level of growth, many plantations, for the first time in a decade, had an opportunity to shed some of the debt accumulated before 1786. Little wonder they vigorously defended their perceived monopoly, especially against an interloper, none other than the East India Company, the holder of the greatest of all monopolies.

The West Indian lobbyists belonged to two schools: the most realistic was comprised of those with an in depth knowledge of trade, an example being Francis Baring, Banker and Deputy Chair of the East India Company in 1792, he understood that India could not produce large quantities of exportable sugar in the short term (Chapter 1 above). A second school of thought held the view that

muscovado. The estimated cost per annum of molasses lost by drainage during the voyage was £600,000; a further £300,000 was also lost through freight costs due to muscovado being much heavier than clayed sugar.

²⁴ *Select Committee Sugar and Coffee Planting in Her Majesty's Territories in the East and West Indies, Mauritius and Ceylon 1847-48*, Eight Report, p. X.

²⁵ Eric Williams, *Capitalism*, p. 56. From 1793, the West Indian colonies could access European ports south of Cape Finisterre.

²⁶ Selwyn H. H. Carrington, (2002), p. 37, the "highest point of cultivation and improvement" were said to be the years 1774-1776, just prior to the War Of Independence.

²⁷ S. Dreyscher, (1977), p. 116.

Bengal was a potential agricultural El Dorado, they feared a deluge of East India sugar;²⁸ this group would lead the opposition to East India sugar imports.

It was, however, neither an East nor a West Indian that began what turned out to be a long running campaign over sugar duties; the ad-valorem nature of the import duties came into being simply because sugar was not enumerated separately in the Act governing East India imports. Sugar, along with such items as silk and cotton piece goods, was for customs purposes classified as a manufactured article and as such carried an import duty of £37.21 ad-valorem.²⁹ The Company, as we have seen (chapter one above), was unable to obtain equal duty with West Indian sugar. This refusal effectively meant it would continue to pay duty on a strict ad-valorem basis until 1803³⁰ when a duty rate per ton became the largest component although an ad-valorem component remained.³¹

Ad-valorem taxes based on the actual value of the item pay higher rates than fixed taxes; only as long as the value of the item taxed is high. This was the case for East India sugar 1793-99, a period during which West Indian muscovado was worth up to £87 per ton, from 1800-1801, however, its price fell to £30.00. During the same period East India sugar sold at £60 to £115 per ton inclusive of duty, falling in 1800-1801 to £28 per ton, the prices in the first period clearly reflect the ad-valorem nature of duties at a time when sugar was expensive.³²

By 1800 the ad-valorem basis for duty had ceased to favour the West Indians, as it had during the late 1790s when the duty was as follows: West Indian brown was £17,50 duty per ton, white clayed sugar £23.40 per ton and all East

²⁸ *Ibid*, p. 157. The West Indians were not the only group to fear India's potential as a sugar producer. Similar fears may have been a factor in the decision of France to return to slavery after 1815. The French possibly held a view that the motive for Britain's stand on abolishing slavery was to promote India as a source of tropical products at the expense of the French islands. This would have left the French dependent on Britain for much of their tropical food imports

²⁹ *E. I. S. App.* IV p. 1.

³⁰ Command Paper (8706) 1894, *Report of Customs and Tariffs*, p. 215-6

³¹ *Ibid*, p. 216,

India sugar £37.81 ad valorem plus £2.50 per ton.³³ In 1800-01, the price fell to £40 per ton, East Indian sugar then paid £16.02 per ton duty, while West Indian sugar on a fixed basis then paid £20. From 1800 to 1803 sugar prices were frequently between £35-£50 per ton,³⁴ at £35 per ton East India sugar paid £15.33 duty, while West Indian continued to pay the fixed rate of £20 per ton. At such times East India sugar held the advantage, the reality, was of similar duty levels, with *khand* only holding the advantage when prices were at the bottom of the range. In 1803, the ad-valorem rate on East India sugar duties fell to an insignificant level of £1.20 per cwt plus £1.31 ordinary duty per cwt, or £26.50 per ton for all East Indian sugar, West Indian muscovado paid £24 per ton and white clayed £27 per ton. It was the latter that *khand* competed with, this rate of duty helped to ensure it a place on the shelves of the grocery shops.³⁵

Protection, Revenue, Subsidy and East India Sugar 1800-1825.

By the end of the eighteenth century, sugar had become one of the top five sources of government revenue, and sugar duties would increase substantially as the British exchequer sought to finance war and service a burgeoning national debt.³⁶ Consequently, the British government was unlikely to jeopardise this lucrative source of revenue, especially during time of war, by changing the duty regime in favour of East India sugar. The question of balance between two of the major importers may have also been a consideration if as Javier Cuenca Esterban suggests: "without the accumulated credits from India transfers since 1757, Britain's financing of land warfare during the French wars could have been

³² William Reed, *The History of Sugar and Sugar Yielding Plants*, (London, 1866) pp. 146-7.

³³ Act to Amend Sugar Duties 1797, 37th Geo. 111, Cap. 15.

³⁴ L. J. Ragatz, (1928), Chart 19 p. 340.

³⁵ *E. I. S App.* IV p. 3.

³⁶ G. R. Porter, *Progress of the Nation*, (London, 1847) p. 552. In 1801, sugar revenue was worth £2,782,232; a tax that equates to 25 new pence per person per year.

compromised.”³⁷ Transfers of capital from India, however, were through commodity imports, insurance, mercantile charges, re-exports and as we have seen in chapter 1, via Indian exports in neutral vessels through European ports, therefore it is possible that the government were not at the time fully aware of the extent of transfers. Whatever the state of knowledge, imports from the East Indies brought to the exchequer a return through tea and a variety of Asian products, the West Indies were largely a source of sugar revenue. In effect, sugar was central to West Indian economy, while in the medium term at least, sugar remained peripheral in the East India trade. A balance between the interests of the two Indies may have been part of the rationale, but other simpler considerations probably influenced the government, the collection of revenues being chief among these. Sugar offered a particular advantage to revenue collection, in that as a bulky commodity, unlike tea and other highly taxed imports, it could not be easily smuggled.³⁸

The government, however, could not use sugar imports as a revenue milch cow without the consent of influential groups in the British body politic, such as West Indian planters, merchants and shippers, the British refining industry and the landed interests. The latter were supportive of the West Indians but saw sugar as a competitor to their wheat, especially when sugar went to the distilleries, as was the case 1808 to 1811.³⁹ In a discussion of the influential groups within the British

³⁷ Javier Cuenca Esterban, “The British Balance of Payments, 1772-182: Indian Transfers and War Finance, pp. 58-86 *Economic History Review*, L1V, 1 (2001) p. 58.

³⁸ An indication of the extent of smuggling can be gained from W. A. Cole, “Trends in Eighteenth century Smuggling,” *Economic History Review*, Second Series X (1958) pp. 395-410. and “The Arithmetic of Eighteenth Century Smuggling” *Economic History Review*, Second Series xxviii (1975), pp. 44-49. See also Hoh Cheung and Lorna Mui, ‘Trends in Eighteenth Century Smuggling’ Reconsidered,” *Economic History Review*, Second Series xxviii, pp. 28-43. These articles are predominantly on tea imports and do not put precise figures on the total extent of smuggling. Javier Cuenca Esterban, “The British Balance of Payments, 1772-1820,” p. 60 Table 1. In common with the authors of the above article, Esterban also admits to problems with the lack of data during the eighteenth century. He, however, attempts to put some meat on the bones of illegal imports indicating that in the period 1784- 1820 the total cost to revenue may have been £4,479,000.

³⁹P F. Dixon, (Oxford, 1971) p. 181 and S. Dreyscher *Econocide*, p. 140

body politic and their interrelationships with regard to slave emancipation, Peter F. Dixon explains how they were able to reconcile their divergent interests and find a form of consensus over trade, revenue collection and competition between the products of the colonial plantation and the British cornfield.⁴⁰

High duties and the costs and inefficiencies of the West Indian mercantile system, saw sugar become less affordable to the bulk of the British population, the working poor, a group which by 1800 consumed only small quantities, (Appendix 1 Table 20). Consequently, as production grew from the late 1780s, due to the introduction of new varieties of cane,⁴¹ sugar surplus to the requirements of British domestic consumption, both raw and value added, was moved through re-exports to Europe.

The government had long recognised the need for, and the value of, this re-export trade and from 1776 began to offer incentives. From this time up to the early 1790s, "British plantation" muscovado enjoyed a drawback of import duty when re-exported. In the last decade of the century, however, the proportion of duty returned as a drawback decreased.⁴²

An increase in import duty drawbacks became a matter of urgency in the early 1800s, largely due to the high stocks of West sugar Indian in British warehouses, brought on by increased imports due to high yielding canes introduced toward the end of the century (above), and the embargo on British imports imposed by the Napoleonic system adopted in 1806. The problem was exacerbated in 1799 by the collapse of mercantile houses in Hamburg⁴³ dealing

⁴⁰Ibid, pp. 45-52 passim.

⁴¹ W. A. Green, "The Planter Class and British West Indian Sugar Production, Before and After Emancipation," pp. 448-463 *The Economic History Review Second Series, Volume XXXVI*, No. 3, (August, 1973), p.454.

⁴² Command Paper (8706) 1894, *Report of Customs and Tariffs*, p. 214.

⁴³ Thomas Tooke, *A History of Prices and the State of the Circulation, 1793-1837, Vol. 1.* (London, 1838), pp. 233-4. Eighty-two houses failed in Hamburg August -November 1799. The combined loss was £2.5 million. The loss at sea of the frigate Lutine, carrying \$600,000 to Hamburg, added to the shadow of gloom.

extensively in sugar; which in turn affected the financial viability of some West Indian merchants;⁴⁴ particularly those of Liverpool. Later that year parliament granted exchequer bills of £500,000 to cover losses incurred, secured on the £2,000,000 of colonial products built up in the merchants' warehouses.⁴⁵ To prevent further deterioration of the West Indian sugar economy, the government also increased subsidies for re-exportation of raw and value-added sugar.

Table V Re-export Bounties, Drawbacks, Net Sugar Revenue and Total Yield of Import Revenue GB.1801-1822.

Year	Column 1	Column 2	Column 3	Column 4
1801	£ 604,776	£ 486,544	£2,395,106	£6,784,637
1802	902,111	968,690	2,302,339	8,757,184
1803	1,191,967	737,624	1,014,047	7,698,958
1807	1,143,051	£138,550	3,029,484	10,799,041
1808	934,220	59,310	4,074,531	12,647,899
1809	996,220	219,009	3,273,995	12,606,782
1810	1,124,251	123,334	3,117,330	14,375,388
1811	392,149	119,991	3,339,218	14,395,600
1812	693,650	260,761	3,939,939	13,025,502
1813	1,162,794	120,785	3,481,350	13,936,537
1814	1,133,958	139,661	3,276,513	11,365,875
1815	1,465,289	87,246	2,957,403	11,817,718
1816	1,492,800	47,342	3,166,851	11,276,352
1817	1,641,736	43,788	3,967,154	11,896,311
1818	1,683,158	42,713	2,331,472	13,398,852
1819	1,265,788	21,362	3,507,844	13,855,019
1820	1,608,480	11,467	3,477,770	12,974,357
1821	1,381,721	*	3,494,470	11,857,624
1822 ⁴⁶	916,872		4,410,070	12,734,560

⁴⁷Ireland excluded. Column 1 Refined Bounties Column 2 Raw sugar Duty Drawbacks Column 3 Net Revenue from sugar duties. Column 4 Total Yield of Sugar Revenue. * From 1821 raw sugar drawbacks diminished and are included with bounties.

The amount of subsidy on re-exported raw sugar increased once more to full drawback in 1803, the same legislation awarded re-export bounties of £25 per ton for bastard sugar (sugar discoloured by heat during the refining process), £22 for powdered sugar and £38 per ton for single and double refined.⁴⁸ The importance

⁴⁴ W. Reed, *Sugar Yielding*, (1866) pp. 146-7.

⁴⁵ *Ibid*, p. 147.

⁴⁶ P.P. 1821, 1807-20 (442) XV11.178 and 1823, 1822 (63). XIII.579: *Accounts of Sugar Imported and Exported from GB. And the Amount of Duties Received*.

⁴⁷ P.P. (Command) 8706, (1894) *Report of Customs and Tariffs*.

⁴⁸ P. P. 1828, (125), XIX.527, *Account of Quantity of Sugar Imported and Exported from G.B. and Ireland, and Amount of Duties Received*. Bounties would increase gradually until by 1810, they were worth £31 bastard, £27.75 powdered, single refined and loaf and £60.05 double refined. By 1823, they had fallen to £30 bastard, £46 single refined and £54 per ton double refined. Seymour Dreyscher, (1977), Table 24, p. 127. In 1787, some 186,040 tons of foreign colonial sugar went from the Atlantic sugar colonies to Europe. Of this,

of sugar duties as a component of revenue and the extent of sugar bounties and drawbacks is evident in the table above. In a further attempt to lower the stockpile in 1808 and 1811, parliament allowed sugar to go into distilleries.⁴⁹ In 1808, however, the measure proved to be a complete failure, prices of British West India sugar rose by £10 per ton and a further 40,000 hogsheads was added to the stockpile. Any change in the duty regime tended to bring on speculative trading, see chapter 4 below)

From 1784 through to 1797 import revenue from all sources was in a range £3 to £4 million, but in 1799 it increased considerably to £7 million,⁵⁰ sugar a component part of revenues since 1660,⁵¹ also increased substantially. In 1797 and 98, for example, sugar duties increased by £2.50 and £1.83 per ton. Further imposts came in 1799, when two Acts not only increased the revenue, they also discriminated in favour of the West Indies. The East India Warehousing Act brought an increase of 2 percent on all East India sugar imports payable by the East India Company.⁵² The second act increased duty on West Indian muscovado by a further £0.65 per ton, with an additional £3.93 per ton on white clayed West Indian sugar, and £0.67 per ton extra on East India sugar. The discriminatory element of these acts lay in an additional tax on re-exports of East India sugar of £5.98 per ton. Discrimination against East India sugar at this point is clear: the levy on foreign re-exported sugar was much lower at £2.45;⁵³ an impost repealed the following year.

only 3,720 tons of muscovado went via Britain. In 1800-01, 155,910 tons crossed the Atlantic and 59,246 tons went via Britain. In 1802 (Peacetime), there were some 177,140 tons, of which 93,884 went via Britain. In 1805-6, there were 158,250 tons with 45,892 going via Britain.

⁴⁹ Seymour Dreyscher, *Econocide*, p. 180.

⁵⁰ Command Paper (8706) 1894, *Report of Customs and Tariffs*, pp.48-9

⁵¹ *Ibid.*, p. 212

⁵² *E. I. S.* App. IV p.3 39th Geo. 111 Cap. 63.

⁵³ *Ibid.*

It is probable the West Indian Committee sought to stem the increase in the re-export market to Europe for East India sugar. This trade started as a trickle in 1792, had risen to 6,087 ton by 1798, some sixty percent of all East India sugar exports to Britain.⁵⁴ These amounted to only 10 percent of total re-exports, but they had the potential to become a significant threat to the West Indians in what had by 1800, become a highly competitive market.

In 1803,⁵⁵ the worst aspects of the ad-valorem duty ended. The new act contained a remnant of ad-valorem; the duty was now £32 per ton on all East India sugar and £24 per ton on West Indian muscovado. This act, however, proved to be harmful only to *khaur* or muscovadoes; good *khandisari* sugar still maintained its niche in grocery shops.⁵⁶ An additional revenue burden came in 1803, the so-called temporary war duties (table V1 below), which would remain until May 1816, when they became permanent.⁵⁷

Table VI War Duties: amounts paid per ton in addition to normal duty

War duties	1803	1804	1805	1806	1809
	£2	£0.30	£0.50	W/I £3 E/I £4 ⁵⁸	W/I £11 E/I £10.40. ⁵⁹

The East India Company in 1806 cried foul when a higher war duty was imposed on East India than on West Indian sugar, in 1807 they again protested when the government awarded an additional £2 per ton to on re-exported West Indian muscovado.⁶⁰ By 1809, West Indian muscovado paid £36.60 duty per ton, white clayed £40, East India £40.80 per ton.⁶¹ A combination of duty, freight costs, insurance premiums and shortages of vessels 1803 to 1813, contributed to a fall

⁵⁴ P.P. 1812-13 (136), Vol. VIII.251 *Accounts and Papers Relating to East India Company's Shipping, Coasting Trade, Privileged and Private trade, and Commerce with GB. America and Europe, 1812-13*

⁵⁵ E.I.S App. IV p. 3 Sugar Duties Act 43, Geo. 111. Cap. 88.

⁵⁶ Zachary Macaulay, (1823), p. 12.

⁵⁷ E.I.S. App. IV p. 3. These Acts were: 54th Geo. 111 Cap. 64 and 55th Geo. 111 Cap. 3

⁵⁸ *Ibid*,

⁵⁹ *Ibid*, 49th. Geo. 111, Cap 98.

⁶⁰ *Ibid*, p. 2, Sugar Duty Act 1807 47th. Cap Geo. 22.

⁶¹ Command Paper (8706) 1894, *Report of Customs and Tariff*, p. 216

off in the East India sugar trade, the annual average importation being 4,669 tons compared with 6,190 from 1793 to 1802.⁶²

Despite the many changes to duty, the West Indians did not have a duty barrier between their imports and those of the East Indies, in the first decade of the nineteenth century; a problem again brought to their notice during the parliamentary inquiry into the India monopoly. In 1810 East India merchants, Henry Trail, Henry Fawcett, John Innes and R.C Bazett, told this Select Committee, how sugar imports would substantially increase at the cessation of should the India monopoly.⁶³ Further intelligence of sugar in Bengal came from John Gladstone, a merchant and a Member of Parliament with both East and West Indian investments. In 1812, he informed Ellis, a prominent West Indian lobbyist, the price of *khaur* in Calcutta was only £10.70 per ton and Banares fine *khand* was £24.55 per ton.⁶⁴ This intelligence and the evidence of the East India merchants, once again conjured up the vision of a "British sugar bowl" in the sub-continent, just at a time when sugar values were showing signs of improvement (see Appendix 1 Table 13 Gazette average prices).

From 1813 to 1815 the duty on East India sugars went through a virtual roller coaster of changes: May 1813 saw the duty on West Indian muscovado increase by £3 per ton to £30, with East India sugar at £33; 1814-15 saw West Indian sugar duty unchanged, while East India duties moved both up and down from quarter to quarter. At its high point, it reached £39, at its lowest paying the same duty as West Indian, £30.⁶⁵ A spokesperson for the movement for the abolition of slavery directly linked these changes in duty to the East India charter negotiations, claiming: "The changes to the East India Charter in 1813 that

⁶² *Customs House Report: Sugar Imported Into Great Britain 1793-1822* (London, 1822)

⁶³ *Select Committee on East Indian Affairs, (1811-12)*, Fourth Report p. 292.

⁶⁴ *E I S. App. IV*, p. 56.

⁶⁵ Command Paper (8706) 1894, p. 216.

allowed free trade between India and Britain struck fear into the hearts of the West Indians."⁶⁶ Concerned by the probable increase in shipping on the India route, post monopoly, Charles Ellis entered into correspondence with the Chairman of the Committee of Liverpool merchants, at that time petitioning for the opening up of the East India trade. This correspondence led to an agreement that would potentially give the West Indian a protective tariff of £10 per ton below East India sugar, and secured the votes of the West Indians in favour of the cessation of monopoly.⁶⁷

The Company's Response.

The East India Company remained luke-warm on the promotion of the East India sugar trade through much of this period, and at some stages positively discouraged discussion on the subject, it did so because it did not want to complicate the on going and delicate negotiations with regard to the renewal of its India monopoly. The sugar trade from the outset proved problematical. The West Indian shareholders opposed its inception (chapter one above). The Directors of the Company also came under attack from sections of the East India Court that favoured the East India sugar trade. This group wanted a vigorous campaign to obtain equalisation of duty between East and West Indian sugar. An influential group calling itself "Consumers and Traders in Sugar" held frequent meetings at the New London Tavern Cheapside⁶⁸ and described themselves as Free Traders.⁶⁹ The free trade they sought, however, was not proto-Cobdenism; instead, it was an attempt to loosen the bonds of monopoly and free up the charter system that favoured the "old ship owners."

⁶⁶ Zachary Macaulay, (1823), p.17.

⁶⁷ *Ibid*, p. 18.

⁶⁸ *A Series of Debates* (London, 1793) Appendix X, p. 208-213 passim.

⁶⁹ *Ibid*, p. 213.

Prior to the 1807 Act prohibiting the British from trading in slaves between Africa and the British West Indies, the East India directors (chapter 1 above), had good economic reasons not to confront the West Indians on the question of sugar duties because of lucrative economic links with the slave trade. However, when this economic imperative ceased, the East India Company did not bring the question of equal duties before the House of Commons until 1823 (below).

Political debate, post 1807 continued to be volatile during discussions on the issue of slavery. In such an atmosphere, the East India interests were not in a position to address the problem of equal duties and equal access to the British market without aligning themselves with groups favouring abolition. A serious political assault on the subject of equal sugar duties may have inspired further attacks upon slavery and, perhaps, turned into a debate on the morality or economic rationale of monopoly. The complex and sometimes contradictory interests or motives of the leading actors further compounded the problem of mounting any political move in parliament. Many politicians, merchants and capitalists among the body politic had financial interests in both the East and West Indies.⁷⁰ The monopolist of the East certainly had no moral authority to attack the sugar monopolist of the West, nor was such an attack wise. Both had a mutual interest in maintaining monopoly; an attack on one monopoly could soon translate to an attack on all monopolies.⁷¹ Among the mercantile interests, only those at out-port e.g. Hull, Liverpool, Greenock etc., was disadvantaged by monopoly; they supported its termination.⁷²

⁷⁰ P. F. Dixon (1971), p. 59 This community of interests between East and West Indians is evident in voting patterns in the House of Commons 1820-32: i.e. of the 184 members of parliament with East India connections, some 23 of them also had West Indian investments, including prominent and influential figures such as John Gladstone, Alexander Baring and Edward Ellice.

⁷¹ Zachary Macaulay, (1823), p. 19. In November 1813 the announcement in the Commons of an additional duty imposed on East India Sugar was not opposed, when an East India spokesperson Fawell MP attempted to speak, "he was not heard due to the noise of the chamber."

⁷² P. F. Dixon, p. 62.

The East India sugar trade threatened to complicate the delicate negotiations for the renewal of the charter 1809-13, consequently the directors sought to marginalize it as an issue. As we have seen, some private merchants believed sugar was a commodity with growth potential: Grant and Parry chairman and deputy chair of the Company did not accept this. In their submission, sugar was but a minor commodity. They obviously wished to show the West Indian lobby that East India sugar offered no significant threat to their sugar monopoly as long as the India monopoly continued. References to India's sugar potential were written in terms intended to reassure the West Indians, observing, "Sugar was not a profitable trade item, should its export be encouraged, it could only be at the expense of the West Indies."⁷³ What they implied, however, was that free trade would bring the risk of increased shipping and additional sugar exports from India. To Grant and Parry, East India sugar was a mere pawn in the game played out to retain the India monopoly, an unimportant sacrifice.⁷⁴

The West Indian interests kept their bargain with the Committee of Liverpool merchants and opposed the renewal of monopoly, but they were one group among many opposing monopoly. Other powerful lobby groups also opposed the monopoly, such as the Union of Provincial Businessmen, Birmingham industrialists and the East India merchants of Liverpool, Hull and other out-ports. A broad stratum of mercantile and industrial groups were in opposition to the Company, such groups were seeking to free up trade and create new market opportunities outside of formal empire. Consequently, the EIC

⁷³ *Select Committee Affairs of the East India Company 1811-12*, Statement to the Committee by Grant and Parry, p. 127.

⁷⁴ Ainslee Embree, *Charles Grant and British Rule in India*, (London. 1962), p. 158 Grant believed that free trade, or the loss of the India monopoly, would undermine British rule in India.

received poor and uncoordinated support from the usually influential London merchants and were unable to prevent the loss of the India monopoly.⁷⁵

The once great trading Company once lauded for its contribution to Britain's economic well-being was, by 1814, deeply in debt, the primary cause of which was territorial acquisition through war in the sub-continent. The Company, which once raised capital to support the British government (chapter one above), was now a debtor seeking government loans to keep it afloat.⁷⁶ Monopoly and protectionism would continue for two more decades--the West Indian sugar monopoly and the E.I. Company's China monopoly continued until 1833--during the second decade of the nineteenth century, however, monopoly and enclosed imperial protectionism would gradually be seen as anachronisms.⁷⁷

The export of East India sugar to Britain started with a flourish in 1792, however, at no time between this date and the proposal of Company chairman Whitmore for parliament to examine sugar duties in 1823, was the importation of East India sugar seen as a priority. Consequently, the sugar trade did not bring the Company into serious conflict with the mercantile and planter interests of the West Indies.⁷⁸ The West Indians, as we have seen were not passive 1792 -1813, and they remained vigilant post monopoly. The new trade environment would

⁷⁵ Anthony Webster, "Political Economy," (1990) pp. 404-419), p. 405. See also P. J Cain and A. G. Hopkins, "The Political Economy of British Expansion Overseas, 1750-1914," *The Economic History Review*, 2nd Series, Vol. XXXIII, No. 4, (November, 1980), pp. 403-490. Among those groups in opposition to the renewal of the monopoly, were the Birmingham manufacturers who were suffering recession due to the blockade of Europe and the result of Orders in Council on American trade. They opposed the monopoly in the belief that freer trade would bring stronger markets within the Empire to replace or supplement those presently in jeopardy.

⁷⁶ Phillip Lawson, (London, 1993) p. 137. Amales Tripathi, *Trade and Finance*, (Calcutta, 1956), p. 98 and p. 105.

⁷⁷ Ralph Davies, *The Industrial Revolution and British Overseas Trade*, (Leicester, 1979), chapter 4 discusses how British merchants and industrialists sought wider markets for their products, one of the catalysts in the break with the established trading system that incorporated mercantilism and monopoly.

⁷⁸ In 1822, the East India Company was instrumental in the publication of *East India Sugar: Papers Respecting the Culture and Manufacture of Sugar in British India*. This publication, extensively quoted in this thesis, was written in response to a bill laid before the House in 1822 that would continue the increased level of duty imposed on East India sugar for another year. The book fails to make a strong case for East India sugar per se, but does show how important sugar was as a ballast cargo.

inevitably lead to increased numbers of ships returning from India, which in turn would require ballast cargoes and sugar remained one of the commodities most likely to fill this role. Consequently, the West India lobby kept up the pressure to establish a duty differential sufficient to give them a clear buffer of protection. These efforts bore fruit in 1814 when a differential of £10 per ton for muscovado came into being, which as it turned out, would be the level it would hold until 1830, it then fell to £8 per ton.⁷⁹

The Trade Environment Post Monopoly.

The breakdown of the Napoleonic economic system began as soon as it came into being in 1806, by 1813 sugar imports were freely flowing to Baltic ports, coincidental with the climax of negotiations leading to the cessation of the more restrictive aspects of the India monopoly. This ease of access offered advantages to foreign Caribbean and Brazilian sugar producers also.

One of the first areas of difficulty was the sugar produced in French and Dutch islands captured by Britain; because merchants re-exporting refined and good quality clayed sugar, wanted this sugar, particularly that of Martinique, to pass through the British emporium at a rate of duty close to that of British plantation. High quality Martinique sugar, if sent directly to Europe, would impinge on their re-export market since its quality was equal to, or better than, British West Indian white clayed.⁸⁰ From 1814, Martinique sugar that produced in the recently occupied isles of St Eustasia and St. Martin entered Britain paying only slightly higher duty than "British plantation" sugar,⁸¹ (for quantities see foreign sugar Appendix 1 Table 12).

⁷⁹ R. Davies, (1979) *Chapter IV passim*.

⁸⁰ Zachary Macaulay, (1823), p.114.

⁸¹ *Ibid*, pp. 19-20.

Competition from Cuba and Brazil also increased substantially 1814-1823; an eventuality reflected in the decline of sugar re-exports from Great Britain to European destinations. The direct passage of Cuban and Brazilian sugar to European markets post 1815, circumvented additional cost incurred during the war years of trans-shipment via British ports; West Indian re-exports, however, continued to incur these costs. Consequently, total re-exports of sugar fell from 46,004 tons in 1814 to a mere 14,491 by 1823, sugar refined from British West Indian muscovado being amongst the worst affected (Appendix 1, Table 15).⁸² An indication of the growing capacity of Cuba's exports is apparent in the export figures 1811-1823, when the number of cases of sugar exported from Havana increased by nearly a third from 206,487 to 300,211.⁸³ Competition in the re-export market from East India *khand* also increased post monopoly. European markets were familiar with *khand* thanks to the thousands of tons carried there in American and Danish ships 1790-1808 (Chapter 1 above).⁸⁴

On the home market, fine East India sugar, invariably of a quality similar to West Indian clayed, continued to enjoy a slight price advantage in the grocery trade. In the re-export trade too, its quality was recognised; it could be re-exported without recourse to value adding. It is quite probable that the concern of the West Indian lobby was less with the limited penetration of *khand* in Britain, than in the re-export trade. In 1814 some 52,900 tons of raw sugar were re-exported to Europe, of this the West Indian contribution was 52 percent, foreign sugar 44 percent and East India a mere 4 percent.⁸⁵ By 1821 sugar stocks built

⁸²L. J. Ragatz (1928), p.336.

⁸³*Ibid*, pp. 337-8 see also Dale Tomich, *Slavery in the Circuit of Sugar: Martinique and the World Economy 1830-1848*, (Baltimore, 1990) p. 15. In 1791 Cuba produced 16,731 metric tonnes by 1815-19 this had increased to 44,734

⁸⁴ P. P. 1821 (490) XVII.197, *Sugar Imported and Exported from G.B. and P. P.* 1830 (313) XXVII.3 indicate the main customers for re-exported East India sugar were those of Hamburg, Holland and Russian Baltic ports.

⁸⁵ *E. I. S. App. IV* pp. 22-29.

up during the war were disposed of, and re-exports of West Indian sugar decreased appreciably, recovering a little 1826-28: by 1830, they had become and would remain insignificant.⁸⁶ During the period 1821-1824, foreign sugar dominated re-exports of un-refined sugar (Appendix 1 Table 17). Re-exports of West Indian clayed sugar 1819-1825, continued strongly with an annual average of 7,577 tons, in the same period re-exports of East India sugar averaged 5,751 tons⁸⁷. In addition to penetration of the re-export market, *khand* continued to hold its market in Britain, providing it was fine clean Banaras, Mau or Azamgarh *khand*, which sold to the grocery trade at £4 per ton above West Indian muscovado.⁸⁸

The cessation of the India monopoly West Indian concerns were raised further because of the increase in vessel numbers; reductions in freight costs, through lower insurance premiums and the removal of wartime diminution such as convoys. A consequence of these changes was, freight rates of £20 to £30 per ton 1800-1815 became £10 per ton in 1818 and fell further to £5-7 by the late 1820s.

Selwyn H. H. Carrington's research indicates that the West Indian sugar economy had been in decline after 1787 and many plantations carried a large debt burden by 1810. Amongst the problems besetting the sugar colonies he lists; falling productivity, the increased cost of food, lumber and other consumable, shortages and the high cost of slave labour, poor prices for sugar and rum and high import duties in Britain.⁸⁹ If indeed Carrington's thesis is correct, the West India Committee were fighting for the economic survival of the British Caribbean sugar islands. The buffer of £10 per ton offered them some solace, but any threat

⁸⁶ P. P. 1844 (153) XLV.201 *Quantity of Sugar Entered for Home Consumption 1830-43 and Quantity of British Refined Sugar and Molasses Exported.*

⁸⁷ P. P. 1829 (319), XVII.369: *Account of the Quantities of British Plantation and Foreign Sugar Imported and Exported from Great Britain 1819-1828.*

⁸⁸ L. J. Ragatz, (1928), pp. 350 and 358.

⁸⁹ Selwyn H. H. Carrington, (2002), for a summary of these problems see chapter 11 pp. 277-289 *passim*.

to their British market was bound to bring a flurry of West Indian lobbying, as it did in 1820. On this occasion, the area of concern was the high quality clean sugar imported into Bombay and Madras from Java, Manila and China by the ships of the country trade. This high quality sugar was an attractive ballast cargo to East India merchants. Being dry and clean, it did not deliquesce (liquefy) in the ships holds and it found a ready market in the British grocery and re-export trades.⁹⁰

Post monopoly good dry Bengal sugar was in short supply in Bombay and Madras due to export demand in Calcutta; consequently, it did not feature strongly in the Indian port-to-port trade (see Appendix 1 Table 42).⁹¹ Despite this, sugar exports to Britain from Bombay and, to a lesser extent, Madras, negligible before 1814, would during the next seven years, average 1087 tons per year⁹². Between 1814 and 1821, the ports became a gateway through which Asian sugars entered the British market.

The government's response to West Indian complaints was to enact legislative changes in 1821. One of which was to insist that all East India sugar admitted for home consumption had a certificate declaring its origin to be the Bengal territories of the East India Company.⁹³ The sugars from Java, China and the Philippines, obviously did not comply, consequently these became foreign for duty purposes and paid £63 per ton import duty. The second measure increased the duty on *Khand* by £5 per ton. When in 1814 the differential was first established, all East India sugar paid a single rate of duty, an arrangement that gave fine *khand* an advantage over West Indian clayed sugars. Negotiations between the West Indian lobby and the government in 1821, eventuated in the

⁹⁰ *E.I.S App.*, p. 45.

⁹¹ *Ibid*, p. 45 and p. 47.

⁹² *Ibid*, pp. 70-73. To arrive at the figure of £24.63 per ton the sicca rupee values in the East India archives are given an average value of eight to the pound sterling, then divided by the average cost in the tables on these pages.

⁹³ *Ibid*, p 3.

first Fife House agreement,⁹⁴ and led to *khand* paying the additional £5 per ton between 1821 and 1823. This effectively ensured all East India sugars, *khaur*, *khand* and any Indian sugar made using West Indian technology, paid a differential of £10 per ton over West Indian equivalents.⁹⁵⁹⁶ To achieve this, colour instead of crystalline formation became the basis by which customs adjudged duty. Although *khand* usually attracted this higher duty, the reality was that the measure was impractical, *khand* varied enormously in both colour and texture. To effectively grade East India sugar thoroughly, customs had to open virtually every bag, faced with this time consuming problem they ceased to actually grade East India sugar in 1823, and the government legislated to revert to the pre-1821 practise of one single grade in 1825.⁹⁷

The President of the Board of trade Huskisson recognised both the impracticability of the legislation and the damage inflicting on the East India trade. He sought to balance West Indian concerns with the ballast requirements of the East India trade.⁹⁸ Contemporary with Huskisson's efforts, the West Indians were becoming anxious about the recommendations from a *Select Committee* calling for the opening up of port-to-port trade in India and the China trade to all British vessels.⁹⁹ (Petty restrictions enabled the Company to retain a high level of control over the Indian trade. For example, the license to trade between Indian ports was granted to the captain, in the event of his death, a new licence was needed. Ship owners wanted the license to be given to the actual vessel).¹⁰⁰ Such

⁹⁴ F. S. Dixon, (1971) p. 57

⁹⁵ *E.I.S App. IV p. 3*, Sugar Duty Act July 1821, 1 & 2 Geo. IV Cap 106. The duty on East India muscovado becomes £40 per ton East India *khand* is now adjudged as white or clayed sugar at £45 ton. West Indian muscovado £30 per ton and white or clayed £35 ton.

⁹⁶ Command Paper (8706) 1894, *Report of Customs and Tariffs*, p. 216

⁹⁷ *Parliamentary Debates* Volume LXXVIII (1845), p. 220 28-2-1845. Deacon Hume MP.

⁹⁸ P. F. Dixon, (1971), p. 58.

⁹⁹ *Select Committee of the House of Commons (East Indies and China) 1821*, (746) VI. 191 *Third Report*.

¹⁰⁰ *Report of the Committee of the East India Association, Appointed to Take Into Consideration the Restrictions of the East India Trade*, (Liverpool, 1822) pp. 8-19.

recommendations, if implemented, would bring additional vessels to the India route and an increase in sugar imports. The Company, however, would not consider a breach of its remaining monopoly rights unless Indian country ships gained access to British ports and sugar duties were equalised. The Prime Minister, Lord Liverpool, however, was unwilling to reduce West Indian protection; consequently, the question of trade reform between Asia, Britain and the West Indian colonies was to remain unresolved for the time being.¹⁰¹

In this political climate, it is possible that the West Indian lobby was less reluctant to find a compromise over limited ballast requirements. Negotiations on the question of ballast and protection continued intermittently 1821-1823, led by prominent West Indians Charles Ellis MP, with James Cropper, an East India merchant and leading abolitionist, leading the East Indies group. By 1823, Huskisson was able to steer the protagonist toward a compromise, which in effect became the second Fife House agreement. This saw the removal of the £5 additional duty on *khand*, certificates of origin, however, remained.¹⁰² The agreement included a promised review should British consumption of East India sugar increase by fifty percent over the next three years¹⁰³ and an understanding that the duty differential would remain until the East India charter again came before the parliament in 1833.¹⁰⁴

This agreement actually offered the East Indians some improvement on the existing situation, which would allow the market of fine indigenous sugars in Britain to grow without undue pressure from the West India lobby. The agreement was based to some degree on calculations provided by John Gladstone, statistics that

¹⁰¹ Amales Tripathi (1956) p. 189

¹⁰² C. R. Fay, *Huskisson and His Age*, (London, 1951) p. 379. The purpose of the meeting was to discuss the amelioration of slavery; the question of duties also received some attention.

¹⁰³ Boyd Hilton, *Corn, Cash and Commerce: The Economic Policies of the Tory Governments 1815-1830*, (Oxford, 1977), pp. 198-99.

¹⁰⁴ *Parliamentary Debates* Volume LXXVIII (1845) 28-2-1845, p. 211, Mr Hogg MP.

indicated British home consumption of East India sugar in 1821 to be 3.4 percent, and five percent 1817-20.¹⁰⁵

British consumption 1824-1826 was some 177,465 tons;¹⁰⁶ Gladstone's statistical yardstick indicated that the West Indians were prepared to accept East India imports up to 7.5 percent of home consumption, or around 13,300 tons per annum over the next three years.¹⁰⁷ Fortuitously for East India importers, separation of Mauritius sugar imports from those of Bengal in the annual tabular statistics occurred in 1825 when Mauritius sugar began to enter the British market at the same duty as West Indian sugar (below). This event effectively meant that the whole of the 7.5 percent could come from Bengal. Although the duration of this agreement was for three years, it surely created a precedent that allowed East India sugar imports to grow without undue pressure from the West Indian lobby. A significant increase, however, did not transpire. In 1826, for example, the now separated East India imports were only 4.6 percent of home consumption and did not rise above five percent until after 1836.¹⁰⁸ The differential of £10 per ton above West Indian sugar effectively retarded growth, but the agreement offered merchants a surety that had not previously existed, a virtual quota of the British market. A concerted approach by British merchants to work cooperatively with indigenous merchants and capitalists and establish a price for *khand* attractive to both parties, may well have led to sugar prices in Bengal being contained sufficiently to ensure a viable export trade to the benefit of cultivators, indigenous refiners and East India merchants. In the absence of such arrangements *khand* production was insufficient to meet demand and the price reflected this shortage

¹⁰⁵ Gladstone to Huskisson March 1823, Huskisson Papers British Museum Additional Manuscript Mss. 38744, cited in F.S. Dixon (1971), p. 57.

¹⁰⁶ Command Paper (8706), 1894, *Report of Customs and Tariffs* p. 225.

¹⁰⁷ F.S. Dixon (1971) p. 57 Note 3.

¹⁰⁸ P. P. 1852-53 (461) XCIX.567 *Return of the Quantity of Sugar Imported for Home Consumption and Rates of Duty 1800-1852*.

(see Chapter 4 below). The duty from 1823 was £63 per ton on foreign sugar, £37 on East India and £27 on West Indian muscovado giving the West Indians an advantage of £10 per ton.¹⁰⁹

The Road to Equalisation: 1825-1836.

The West Indians had achieved an acceptable compromise at Fife House in 1823, which left their cherished monopoly largely intact. This victory, however, proved to be short-lived. A gradual breakdown of the virtual West Indian sugar monopoly began almost by stealth in 1825 when Mauritius sugar came to Britain at the same rate of duty as West Indian sugar.¹¹⁰ Initially the admittance of Mauritius¹¹¹ sugar at 'British plantation' rates did not concern the West Indian lobby,¹¹² exports from the island were quite small, only 4,686 tons came to Britain in 1825¹¹³. By 1830, to the alarm of the West Indian planter, exports had grown to 24,285 tons.¹¹⁴ Mauritius, however, was to be the only exception, the British body politic continued to look sympathetically on the West Indian cause, even when the Company's China monopoly ended in 1833.¹¹⁵ In 1836, however, with some £20 million compensation paid to West Indian planters for emancipated slaves and sugar production in decline, the mood of the parliament changed. The Chancellor

¹⁰⁹ Command Paper (8706) 1894, *Report of Customs and Tariffs*. P. 216.

¹¹⁰ For the case made for equalisation of Mauritius sugar duties and petitions from planters and supporting letters from Governor Farquhar see: *P.P. 1825 (236) XiX.437 Papers Relating to the Colonial Trade of Mauritius*.

¹¹¹ E. W. Combes, *The Evolution of Sugar Cane in Mauritius, (Redit, 1937), p. 1*. Sir Robert Farquhar, a very active Governor of Mauritius, was on his return to Britain in 1824 elected as a Member of Parliament. His tireless campaign on behalf of the sugar producers of Mauritius was a significant factor in getting the duties of sugar from the island reduced to the same level as that from the West Indies.

¹¹² G. R. Porter, *The Nature and Properties of Sugar Cane*, (London, 1843), p. 197. West Indian planters expressed considerable concern that Mauritius might produce sugar in sufficient quantities to damage their market share. *Parliamentary Debates Vol. XII, p. 1041*. In an attempt to allay the concerns of the West Indians Huskisson offered an opinion that he expected Mauritius to produce between 6,000 and 7,200 tons per year.

¹¹³ *P. P.*, 1852-53 (461) XCIX.567 *Return of the Quantity of Sugar Imported for Home Consumption with Rate of Duty 1800-1852*.

¹¹⁴ *Ibid.*

¹¹⁵ *Parliamentary Debates Vol. LXXVIII (1845) 28-2-1845 p. 211*. Mr. Hogg MP. In a debate on the changes to the grading of sugar by customs, Hogg pointed out that after the monopoly ceased in 1833, East India sugar, although promised equalisation, did not receive this because the government was still concerned about the effect of emancipation on the West Indian colonies.

of the Exchequer Mr. Spring Rice, later Lord Monteagle, proposed without prior notice, that East India sugar would be admitted as "British plantation sugar."¹¹⁶ During the debate that followed, no one actually spoke against the measure and it passed without a division.¹¹⁷ After several decades of acrimonious debate during which the question of equalisation of sugar duties frequently became a pretext to discuss the vexed question of slavery,¹¹⁸ this quiet acquiescence of the West India lobby reflected the reality of the times.

Sugar Duties and Supply and Demand 1792-1836.

The discussion in this chapter has examined many short-term ebbs and flows in the fortunes of East India sugar, yet despite these movements government policy, tends to have a consistent theme. Although the West Indian lobby was unrelenting with its pressure to protect the British market from all other sugars, to successive governments revenue was of paramount importance, and the overarching reason for their refusal to accommodate East India sugar importers.

One of the less attractive by-products of this policy was that it tended to keep domestic sugar prices high and contributed to a reduction of the consumption by the working poor, which in turn contributed to the surplus in British warehouses (Appendix 1 Table 20 indicates the correlation between low consumption and the working poor). As we have seen, a part solution to this problem was to subsidise re-exports of raw and value added sugar to the tune of

¹¹⁶British Plantation sugar was a description given by parliament to sugar grown in the original British West Indian sugar colonies. Other colonies such as those capture and retained in the French wars and later Mauritius and the East Indies came under this heading.

¹¹⁷ *Parliamentary Debates (1836) Vol., XXXIX, p.724.*

¹¹⁸ *Ibid Vol. I X, (1823), pp. 463-4* Huskisson opposed Whitmore's proposal that a Select Committee be appointed to inquire into the sugar duties between the East and West Indies on the basis that it would degenerate into a debate on slavery. *Parliamentary Debates Volume X (1824) pp. 730-737 passim.* Huskisson's concern that the debate on sugar duties would become a bitter debate on the merits of slavery rather than one on duties was born out in May 1824 when Whitmore rose to propose a committee to enquire

£1 million annually. It was a measure the government could afford, from 1801 to 1814, net income from sugar duties assisted the government coffers to the tune of £47,077,783 (see Appendix 1 Table 16). Although this expenditure assisted British refiners and merchants, and perhaps the planters through larger throughput, it was, in effect, a subsidy paid by the British taxpayer to European sugar consumers.¹¹⁹

The Liverpool East India Committee, when arguing for the lifting of some trade restriction in the East Indian trade in 1822, noted the correlation between high sugar prices, consumption and revenue. The committee, pointing to the years 1814-15, a period of high sugar prices £75.40 and £62.40 per ton respectively, argued that home consumption of 237,318 tons, was much lower than in 1819 and 1820 when the average price was £36.40 to £41.60 per ton and consumption was 291,753 tons.¹²⁰ Hume a close associate of Huskisson at the Board of trade suggested that a reduction of sugar duties might serve to relieve the distress of the poor during the current trade depression.¹²¹ The government would not accept this. Huskisson told the House that statistics to January 1823 indicated consumption at 165,000 tons for 1822, an increase of nine percent over 1814.¹²² His figures based on a comparison of one year with another, however, proved wrong. Figures from the period 1801 to 1814 show per capita consumption averaged 18.45 pounds per annum, a level that would not occur again until the period 1845-9 when the average was 22.5 pounds (Appendix 1 Tables 18-19).¹²³

into sugar export bounties. The speech dealt primarily with slavery, bounties featured only as a minor part of the debate.

¹¹⁹ P. P. Vol. XXXVIII (1857) *Consumption of Tea and Sugar 1801-1856*. pp. 1-2.

¹²⁰ *Report of the Committee of the East India Association* p. 28.

¹²¹ *Parliamentary Debates*, Vol. X, 1822, pp. 76-8 passim.

¹²² *Ibid*, p. 786.

¹²³ P. P., XXXVIII (1857), *Consumption Tea and Sugar*, p. 7.

High duties, be they for revenue purposes, to protect the West Indian sugar monopoly or to subsidise the re-export of sugar surpluses were an expensive exercise for British consumers and had a considerable effect on the consumption. High import duty effectively excluded foreign raw or imported refined sugar from the British market; consequently, foreign sugar was value added in Britain under bond and re-exported.¹²⁴ British colonial sugars with larger crystals, particularly those of Barbados and Jamaica, were either value added by claying, or re-melted, refined, re-exported or consumed in Britain by the wealthier section of society.¹²⁵

The British government, due in part to poor statistics on consumption or more probably its perceived need to protect the revenue base West Indian sugar provided, did little to assist imports of East India sugar. During the period 1815-30, some 140,000 tons of East India sugars were imported. Some 10,000 tons came from Mauritius before the separation of East India and Mauritius sugar in 1825, 75,000 tons was consumed in the UK, much of it through the grocery trade.¹²⁶ *Khaur*, when imported, was either refined¹²⁷ or went to the brewers or refiners, although sugar use by these industries was not always legal. Forty-six percent or 65,000 tons found its way to Europe, much of it was re-exported as high quality clayed sugar.¹²⁸ The re-exportation of East India sugar received no government incentive, the only exception being a small amount re-exported to

¹²⁴ P. P. 1850 (280) LII.457 *Account of Imports and Exports of Sugar for Home Consumption and Rates of Duty 1793.1849*. In 1803, the import duty on a cwt. of foreign muscovado was £2.20 rising to £3.15 in 1836, that on refined sugar was £6.72 per cwt in 1803 rising to £8.40 by 1836.

¹²⁵ P. P. 1845 (86) Vol. XLVI.519, pp. 3-4. Letter to G. Delavaud Secretary Board of Trade London June 6th 1822, from eight East India houses.

¹²⁶ Hoh Cheung and Lorna Mui, "Andrew Melrose Tea Dealer," pp. 35 and 39-40. Sales of *Khand* were by no means restricted to London and nearby regions. Melrose in association with James Richardson a sugar refiner, dealt directly with the East India Company to purchase tea and sugar at their London sales. Melrose had excellent links with carriers operating out of Edinburgh to many areas of Scotland.

¹²⁷ William Thomas Brande, *A Manual on Chemistry*, (London, 1819), p.354. Brande, a professor of chemistry and an expert in sugar refining, writes that: "sugar from the East Indies is unsuitable for refining to white sugar because they do not crystallise so perfectly as other sugars, and approach in this respect the nature of grape sugars."

¹²⁸ P. P. 1829 (319) XVII.369, *Account of Quantity of British Plantation and Foreign Sugar Imported and Exported, 1819-1828*.

Ireland. Not until 1828 was any drawback allowed for sugar carried as ballast from India, then only limited amounts of East India sugars received the same drawback as re-exported West Indian raws.¹²⁹

Protection from foreign sugar and the export bounty system, intended no doubt to assist the West Indian planter, benefited consumers in Europe and the refining and shipping trades.¹³⁰ In 1833 another sugar bill was passed,¹³¹ it consolidated sugar revenues and made the bounty system a little less lucrative for the refiners. These measures primarily assisted refiners re-exporting sugar what was by this juncture foreign, Brazilian and Cuban grown sugar, they also served to maintain a higher price in the British domestic market, which offered a measure of economic support to British West Indian planters.

The high cost of refined sugar and the virtual exclusion of foreign sugar from the British market, created an opportunity for fine, clean sugars of the sub-continent, particularly among sections of the community with higher disposable incomes, the lower middle class, artisans and mechanics, for example; a socio-economic group that would grow during the mature stage of industrialisation.

The discussion of the British sugar market and the place of East India sugar in this market will continue in Chapter 3, which examines the period 1836-1865, one of considerable change to British economic and trade policy.

¹²⁹ *Select Committee Sugar and Coffee 1847-48*, Eighth Report Appendix IV p. 20. Act nine, Geo IV, cap 93, 1828.

¹³⁰ Sir William Young, *West India Common Place Book*, (London, 1807) in *E.I.S Appendix 3* p. 130. Each cwt of raw sugar circa 1806 produced 56 lb refined, 22 lb bastard or ground sugar, 26 lb molasses and 5 lb waste. The profit from raw sugars refined in Britain from 1796 to 1806 was between £21.80 and £39 per ton. All this profit went to refiners and the grocery trades; the West Indian planters received little if any of these subsidies. *P. P.* 1833 (590). XXXIII.551 *Report of Experiments on Sugar Refining by Professor Andrew Ure*. Tests conducted in 1832 indicated that refiners received a drawback of duty of £10,945 plus export bonuses of £4,966 from 9,100 hogsheads of sugar. One cwt. of West Indian sugar yielded some 78.4 pounds (35.6 kg.) of refined sugar, 14.5 pounds (6.6 kg.) of bastard sugar, 17 pounds (7.7 kg.) of treacle and 2 pounds (1kg.) of waste

¹³¹ *Select Committee Sugar and Coffee 1847-48*, Eighth Report, Appendix IV, p. 211. Acts 3 7 4 William IV, cap 58 28-8-1833, (No. 11).

Chapter 3

East India Sugar and the British Sugar Market, 1836-1865.

This chapter will survey the key changes to sugar import duty legislation and relate these changes to the political economy of sugar in Britain during this period. Briefly stated, the argument so far has been that East India sugar was constrained by import duties, which discriminated in favour of "British plantation sugar," initially from the West Indies and from 1825, sugar from the Indian Ocean island of Mauritius. From 1836 onwards, East India sugar was also allowed into the British home market at the same rate of duty as British West India sugar, a change that occurred in an effort to bolster supply at a time when production in the West Indies was diminishing as a result of labour shortages and additional costs brought about by slave emancipation. In the immediate aftermath of equalisation 1836-1839, sugar exports from the sub-continent were predominantly of indigenous *khand*, *khaur* and *shakkar*. From 1840, however, industrialised sugar manufactured in modern factories in Bengal, and from 1842 in Madras, began to enter the British market in increasing quantities. East India imports would no longer be restricted to a few thousand tons per year as they were before 1836; but would grow ten fold during this period.

In explaining the role of East India sugar in the British home and re-export market and the complexities of the market place, discussion will turn on four main points. One: the period 1840-1845 was one in which "British Plantation" sugar (now including East India sugar), the only sugar allowed access to the home market, could not be produced in sufficient quantities to supply a growing British population. Subsequent legislative changes in 1845 to the prevailing duty regime

and to the origin of sugar entering this market, had an effect of greatly accentuating what was already a highly volatile market place.

Two: in order to give a good return on capital investments in buildings and technology in India, East India sugar needed to be possessed of characteristics which offered a high yield in crystalline sugar to the British refining industry or enabled the sugar to be re-exported without need for further refinement. Legislative changes in 1845, undermined this profitability. The system of grading then adopted by customs worked against sugar made in vacuum pan refineries by imposing a higher duty on their most profitable grades. Because of the new legislative situation, the manufacturing capacity of the modern refineries of British India was under-utilised. From this time, the bulk of their produce, in common with that of the West Indies, consisted of muscovadoes, a type of sugar that tended to deliquesce during transportation and competed at the lower end of the market.

Thirdly: the period 1847-9 was one of accentuated price volatility in the British market. The most disruptive element was the Sugar Act of 1846, which allowed sugar to enter the home market irrespective of its origin, a legislative change that convinced the trade that a massive quantity of foreign sugar would flood the market. Sugar prices, traditionally volatile in times of shortage, depression or over supply, went into free fall. Coincidental with this instability was a financial crisis in 1847-48, a crisis, which severely effected France, Britain, and British colonies, and was particularly severe in Bengal. The combined effect of these occurrences brought to an end production in many of the European plantations and refineries in that part of India.

Fourthly: after much of the European sector of the Indian sugar industry closed between 1848 and 1853, the indigenous industry, having substantially increased its exports to Britain due to the export boom of the 1840s, continued to supply the British market with considerable quantities of *khandisari* sugar. This market opportunity began to fade in the late 1850s, as the British refining industry progressively employed new technology to exploit the increased availability of relatively cheap colonial raws in the British market post 1854. This investment resulted in improved output and profitability. Consequently, by 1860 cheaper sugars designed specifically for the growing domestic market, had virtually replaced *khand* from its niche in the grocery trade. In 1862-64, a series of events brought another period of volatility and change to the British sugar market, chief among which was the arrival in Britain of large quantities of refined beet sugar from Europe.¹ These changes completed the elimination of *khand* from the British home market. As a product of traditional technology with fixed production costs, it could not compete with the products manufactured by a technology developed as a result of European industrialisation.

The British Market Place.

The British market during the 1840s proved to be a volatile trading environment, subject to winds of change that blew strongly, if inconsistently, through Britain. Changes or rumours of change brought fluctuations in price and demand. Climatic conditions in Jamaica, Cuba or other major sugar growing countries also brought short-term price fluctuations. This volatility bore heavily on

¹ A strong indication of the growth and scope of the nineteenth century European beet industry is shown in John Perkins "The Agricultural Revolution in Germany 1850-1914 *Journal of Economic History*, vol. X No. 1 (1981) pp. 71-118, and by the same author "The Political Economy of Sugar beet in Imperial Germany, pp. 31-45 in Bill Albert and Adrian Graves (eds). *Crisis and Change in the International Sugar Economy 1860-1914*, (Norwich, 1984). Two other chapters in this publication also discuss European beet sugar production: Roger Munting, pp. 21-30 "The State and the Beet Sugar Industry in Russia before 1914," and Michael Palaret, pp. 47-58 "Beet Sugar and Peasant Economy in the Balkans before 1914,"

East India sugar producers. This was because the British owned industry was dependant on the advance purchase of raw indigenous sugar. There was thence a long time lag between initial capital outlay and the full return on investment.

To those with experience of the colonial sugar trade, volatility was a recurrent feature. Nonetheless In the face of such difficulties, East India merchants and entrepreneurs investing in the nascent sugar industry in Bengal and Madras remained confident of the prospects of the industry. They believed moreover, in the continuation of the protected nature of the British market. Events were to prove their trust misplaced.

This was a market long subjected to protection, subsidy and high import duties (Appendix 1 Tables 25-26), all of which tended to keep retail sugar prices at high levels. By the early 1830s, these problems were further compounded by supply shortages. Sugar entered British ports from many sources both within the imperial tariff system and from foreign countries. The latter, coming mainly from Cuba and Brazil, did not enter the British domestic market, but was value added through refining and re-exported. The West Indies had supplied much of the sugar for value added re-exports 1800 to 1832, but, as their production began to fall, virtually all West Indian sugar was consumed in Britain and consisted of muscovadoes ranging from low grade brown to the strong crystalline sugars of Jamaica and Barbados.

The closed nature of the market and its finite supply position contributed to price volatility. In 1820 for example, the net value of sugar was £24.80 per ton, by 1836, it was £40.8 per ton, and by 1840 £49 per ton. In late 1847, however, with protection reduced, its value was only £28.60. Increases in sugar prices can

appear almost insignificant when presented in tabular form (see Appendix 1 Table 18). Even small increases reduced the consumption of the working poor.

Prior to 1835 the duty structure not only discriminated against imports of East India sugar, it also contributed to anomalies that began to work in favour of the East Indies after 1836. *Khand*, the fine powdered indigenous sugar classified by customs as muscovado, became the preferred sugar of some sections of the middle class, artisans and mechanic groups in society. The legislative changes of 1825 (until they were removed in 1845) also allowed high quality industrialised sugars produced by the advanced technology in Bengal and Madras to enter as muscovado. Some of their product was almost equivalent to refined sugar.

In Britain the term muscovado covered a wide range of sugar from dark brown to straw-coloured and even small crystalline white sugar, the latter two suitable for immediate retail through the grocery trade. The great variety was, as we have seen in chapter two above, due to the trade and cargo practises of the East and West Indies, and as we shall see below, to some extent the import laws in the UK. Merchants and brokers dealing with this range of sugar had through custom and practise, gauged sugar quality by rubbing the sugar between thumb and finger, by this means they ascertained "grain" crystal size and judged if it was soft or hard, "weak or strong."² Customs men, according to the practices established since 1825, generally disregarded colour and judged the grade for duty purposes by crystal size (grain) and feel, with dampness an important guide.³ With large variations occurring in sugars classified by customs as muscovado, brokers were in need of considerable skills to ascertain the yield of crystallisable

² John Scoffern, *The Manufacture of Sugar in the Colonies and at Home*, (London, 1845). p. 98.

³ *Select Committee Sugar and Coffee*, Third Report, p. 247.

sugar or recognise the best end-use of each batch.⁴ In the 1830s, means of measuring the crystallisable yield of sugar were appearing, such as early polariscopes. These, however, would not become effective until the second half of the nineteenth century, as was also the case with chemical testing to determine the actual sugar content.⁵ (For an analysis of the various constituents of cane sugar 1847-8, see Appendix 5 Table 1). The Dutch had abandoned the rule of thumb method by 1839. In its place they developed a system of visual gauges; these consisted of a series of sealed jars in which various grades of sugar were easily visible.⁶ Each sealed jar was numbered according to colour and crystal size; using these jars the customs officer or broker could compare the sugar in bags, boxes or hogsheads and grade them accordingly.⁷ The British Surveyor General customs was aware of this method and had been given two of these Dutch grading jars numbers 18 and 19 at a meeting with the Prime Minister Sir Robert Peel in 1845. He, however, choose not to instruct his department to use of them.⁸

⁴ Quite apart from the requirements of the refining industry and direct consumption of refined, raw and grocery sugars there were other outlets that consumed considerable quantities of sugar. One of these is discussed by Sir Robert Peel in *Parliamentary Debates* Vol., LXXV Series 3 1844, p. 999. An Autumnal peak in sugar consumption through fruit preservation and jam making indicated this particular means of consumption. John Burnet, *Plenty and Want*, (1966), p. 107: The British food processing industry was still quite small in the 1840s, but some well known confectionery and biscuit manufacturers such as Huntley and Palmer 1826, and Carr's of Carlisle 1831 were already quite large consumers of sugar.

⁵ *Select Committee Sugar and Coffee*, (1847-48) Fourth Report Appendix No. 1', pp. 153-158 passim. Report from Professors Brande and Cooper on a new Polariscopes being developed by Dr Jennings

⁶ W. M. F. Mansvelt, *The Origin of the Dutch Sugar Standard*, (N/P, 1925) pp. 3-15 passim. The Nederlandsche Handel-Maatschappij, (Netherlands Trading Society) in 1839, were concerned about the conducted of sugar brokers who graded their imports of Java sugar, and requested a firm of sugar brokers Messers A. E. De Wit and Zoonen and C Rueb and Company of Rotterdam to create a method to accurately measure the quality of the Societies sugar imports. A standard gauge of 21 sealed glass sample jars was the result. Later this became eighteen jars, jar number one contained dark low brown sugar while number eighteen contained white sugar. In the provision of this information, I acknowledge the assistance of my supervisor Dr G. R. Knight of Adelaide University.

⁷ *Select Committee Sugar and Coffee*, (1847-8) First Report, p. 247, In 1845-6 three contemporary experts in sugar chemistry, Professors Ure and Brande and Dr, Cooper, attempted unsuccessfully to develop a reliable system by which to ascertain the actual sugar content of the various sugars for customs.

⁸ *Ibid*, p. 245, Evidence of Mr. C. Dowding, Surveyor General of Customs.

Winds of Change 1840-1846.

Colonial planters and merchants were manifestly confident of the continuation of the imperial system of tariffs and the Navigation Acts when they invested their capital in the nascent Indian sugar industry in the early 1840s. The idea that a volte-face in British commercial policy would sweep away imperial preferences and change the British sugar market from an emporium for British colonial sugar into an international market was inconceivable.⁹ Yet despite their strongly held views, gradual change had been on-going since the 1820s and would continue until the equalisation of all duties in 1854 and the abolition of sugar duties in 1874. A key step in these changes came between 1846 and 1854, with the transition from protected imperial system to one of free trade,¹⁰ a time of transition in British economic thought and of legislative change. Chief among these changes were the repeal of the Corn Laws, lowering imports duties to ensure the availability of low cost raw materials for British industry, and a "cheaper breakfast table" for the British worker, and agreements with foreign nations, to open markets for the products of British industrialisation, such as, the Cobden Treaty with France in 1860, the world's first "most favoured nation treaty." These issues are all beyond the scope of this thesis. The manner in which this legislation threw open the British sugar market to international competition, and the serious repercussions this had on the Indian sugar industry are, however, profoundly relevant, as is the question of the sufficiency of supply and cost of

⁹ Noel Deerr, *History*, Vol.II, p.446. Deerr points out that Tory and Whig parties did not include the sugar trade in their free trade policies. In his opinion sugar as a commodity became involved in the free trade part by default, not as part of any parties policy.

¹⁰ Among publications consulted in connection with free trade were: D. C. M. Platt, *Finance, Trade and Politics in Britain's Foreign Policy 1815-1914*, (Oxford, 1968), "The Imperialism of Free Trade: Some Reservations," *Economic History Review*, Second Series, 321 (1968), pp. 296-306, and "The National Economy and British Imperial Expansion before 1914", *Journal of Imperial and Commonwealth History*, II (1973/4), pp. 3-14. James Foreman-Peck, "Foreign Investment and Imperial Exploitation: Balance of Payments Reconstruction for Nineteenth Century Britain and India, *The Economic History Review*, Second Series August 1989 Vol. 42, No. 3, pp.354-374.

sugar in the British market 1840-1846. It was to deal with the latter issues that Sir Robert Peel and Lord John Russell (respectively Tory and Whig prime ministers,) implemented changes to sugar imports and duty legislation in 1845-46 and 1848.

Through 1840-41 Peel and his close associates had held steadfastly to the view that the British West Indies, supplemented by sugar from Mauritius and India, could supply sufficient sugar for the British market place to keep prices at an acceptable level.¹¹ This policy had a strong element of risk, in that it limited the total amount of sugar available in Britain, which at the time was experiencing population growth, and increased per capita income for some sections of society. Both threatened to bring growth in sugar consumption at a rate greater than the production capacity of the British plantations. By 1844, the correlation between supply and demand would prove Sir Robert Peel's gamble on continued protection for the sugar of the West Indies, India and Mauritius to be wrong. Although the average price increase amounted to only 0.5 new pence per pound, a trifling amount for the middle class, but for much of the working class struggling on low per capita incomes, any increase ensured the amount of sugar in their diet continued to be very low¹² (See appendix 1, Tables 18, 19 and 20).¹³

From 1836 to 1839, penetration of British home market by East Indian sugar increased considerably. Whereas in 1835 only 5,373 tons were imported:

¹¹ W. P. Morrell, *British Colonial Policy in the Age of Peel and Russell*, (London, 1966), p. 171.

¹² Jane Cobden-Unwin, (ed). *The Hungry Forties: Life Under the Bread Tax*, (London, 1904), passim. The authors of the letters and interviews in this monograph were all alive during the 1840s, and they clearly indicate the inadequate diet and low standard of living among the working poor during this period.

¹³ G. R. Porter, *The Progress of the Nation*, (London, 1847) pp. 555-556. Porter suggests that consumption 1840-44 was thirteen pounds per capita, with the middle and upper classes consuming 40 pounds and the working poor a mere six pounds. P. P. Vol. XXXVIII (1857), *Consumption of Tea and Sugar*. Data in this paper indicates consumption of sugar by the working class as 39.5 percent. David Coleman and John Salt: *The British Population; Patterns, Trends and Processes*, (Oxford, 1992) passim. Statistics presented by the author suggest that the working class during this period were some eighty percent of the population. A correlation of the data from these two sources indicates working class consumption 1835-39 of 7.98 pound per head, and the period 1840-44 to be 7.79 per head.

this had increased to 22,179 in 1839. From 1840 to 44, however, the rate of increase was considerable, showing an annual average of 48,797 tons. Sir Robert Peel's hope of India filling the breach was apparently bearing fruit. Unfortunately, this proved not to be the case. Mauritius, for example, had exported to Britain an average of 30,216 tons in 1835-1839; this fell slightly 1840-1844 to an average of 29,438 tons. The British West Indies, by far the major contributor to Britain's needs for almost two hundred years, produced for British consumption an annual average of 168,080 tons in 1835-1839; this fell dramatically, between 1840 and 1844 to 118,337 tons; slave emancipation being the primary cause. The net result was that total home consumption 1836 to 1844 remained in a range of 180,000 to 205,000 tons compared with 185,000 to 201,000 a decade earlier when the population was 2 million less.¹⁴

The problem of sugar supply in the British Isles came sharply into focus in 1843 when the *Trade and Navigational Statistics* became available, figures that showed home consumption of 202,000 tons, almost equal to the 204,000 tons imported (Appendix 1, Table 18).¹⁵¹⁶ With West Indian production falling, the tight margin between supply and demand in the British sugar market was becoming apparent and would continue to deteriorate so long as the policy of drawing all sugar for home consumption from the "British plantations" continued (Appendix 1 table 19). Shortage of supply inevitably led to higher prices and added to the distress of the working poor in a period which historians have often called "the hungry forties".¹⁷ From 1835 through to 1844, there was a secular trend for prices

¹⁴P. P. (1857) Vol., XXXVIII, 1801-1856, *Consumption of Tea and Sugar*, p. 5

¹⁵*Select Committee Sugar and Coffee*, 1847-8, Third Report, p. 77, Evidence of William Scott, sugar broker.

¹⁶P. P. (1846) Volume XLIV. 445 *Accounts Relating to Sugar in Bond*. During the mid 1840's, the stock of sugar in bond varied between 46,897 tons and 61,176 tons or from 24 to 31 percent of annual consumption.

¹⁷For problems with diet and food supply during the nineteenth century see: -J. C. Drummond and Anne Wilbraham, *The Englishman's Food: a History of Five Centuries of English Diet*, (London, 1939), F. A

to remain at the high end of the range and for per capita consumption to fall (Appendix 1 tables 18 and 19).

To ensure adequate supply, some level of foreign sugar imports was required: to accord with the mood of the people, these, however, would need to be free of the taint of slavery. To achieve this end, the legislation stipulated that only sugar grown by free labour would be admitted, the duty would be £9.40 per ton above "British plantation" muscovado and £11.80 above the white clayed duty.¹⁸ This sugar, designated "produced by free labour," required a certificate of authentication issued by a British consul in its country of origin. Problems associated with appointing consuls and printing and issuing relevant certificates in countries of origin meant that only 3,866 tons arrive on the British market in 1845. Of this, Java contributed some 765 tons, the Philippines 2, 951 tons and China 108 tons (Appendix 1, Table 23).¹⁹ This made very little difference to the market price; the price fell early in the year by £1 per ton, the yearly average of £47 per ton was due entirely to the decrease in import duty of £11.40 per ton in 1845.²⁰ The measure barely affected East India sugar producers; additional supply meant new competition, but experience had taught them that significant increase in sugar supplies, other than those coming from slave plantations would take a period of years.²¹

Filby, *A History of Food Adulteration and Analysis*, (London, 1934), John Burnet *Plenty and Want: A Social History of Diet in Britain from 1815 to the Present Day*, (London, 1966).

¹⁸ *Parliamentary Debates*, Third series LXXV, (1844), p. 161. The Chancellor pointed during the debate for the admittance of free grown sugar into home consumption, "That [the Bill] was not entirely outside the West Indians interests [in that the bill] would act as a check on the high price of sugar."

¹⁹ P. P. (1852-3), (984) XCIX .597 *Return of the Quantity of Sugar, Molasses and Rum Imported and Amount of Duty Received, 1842-53*.

²⁰ *Select Committee Sugar and Coffee, 1847-48* Third Report p 77, Evidence of W. Scott, sugar broker.

²¹ *Ibid*, First Report, p. 105 and 114, Evidence of H. M. Kemshead. Citing *The Economist* London 15th April 1848, Kemshead pointed out that the amount of free labour sugar available for export world wide, was in 1847 485,000 tons. Of this 280,000 tons was produced in the British Empire, 75,000 in Java, 30,000 in the Philippines and 100,000 tons of European beet sugar.

East India Sugar in the British Market.

For "British plantation sugar" the ten-year period 1835-1844 was one of buoyant prices. Inclusive of duty, muscovado had a range from £57 to £73 per ton (Appendix 1 Table 18). This period proved to be beneficial for almost all sugar producers in the sub-continent, particularly *khandisari* sugar and the emerging industrial sugar of the new factories. *Khaur*, or low brown sugar, was not -as it would later be the case- a significant component of imports to the British market during this ten-year period.

Initially all sugar produced in the European factories in the sub-continent passed through British customs at the same duty as muscovado, a situation that had its origins in the problems associated with import legislation during the period 1821 to 1825 (Chapter 2 above).²² This situation favoured the better equipped industrialised European factories most of which possessed a vacuum pan, whose experienced sugar makers were able to manufacture and export sugar refined and value added by the process of liquoring or claying and sun drying (for this process see Appendix 6). By this means they produced a grade of almost white sugar, close in quality to British refined, which importantly did not deliquesce on the voyage.

In March 1845, the Peel administration sought to make changes to the existing sugar duty structure. Its aims were two-fold. The first of which was to make sugar more affordable to all sections of the British public by lowering the duty on British plantation muscovado from £25.40 to £14 per ton. In this, he succeeded. Retail sugar prices fell by between £12 and £13 per ton,²³

²² P. P. 1852 (442). LI.617, *Account of the Imports to UK of Sugar, Molasses, Rum, Coffee and Cocoa 1800-1851*.

²³ *Ibid*, Third report, p. 78, Evidence of W. Scott.

consumption rose from the 1844 level of 206,472 to 242,834 tons.²⁴ Peel's second aim was to close the loophole that had existed since 1825, which allowed some imports of high quality sugar to enter Britain at the same duty as muscovado. The new legislation established three grades of "British plantation" sugar. Single refined sugar with a duty of £18.60 per ton, equal to white clayed at £16.40 (see appendix 6) and muscovado at £14 per ton.²⁵ This legislation offered the best of all possible worlds for Peel's Tories. It contained a continued element of protection to the beleaguered West Indian producers, while at the same time offering a more effective way to levy British sugar duties. In effect, it increased the import duty for large crystalline light coloured sugar produced in some industrialised sugar factories in British India and the high quality "Demerara crystals" (a light brown damp sugar of large crystals produced in British Guiana by vacuum pan technology). In 1833 the first vacuum pan sugar imported was "Demerara crystals" from the estate of a rich merchant with trading interests in both the East and West Indies, Sir John Gladstone at Vreed-en-Hoop in Demerara (Guyana). Customs classified this sugar as refined, most of it was returned to British Guiana, but the portion that entered the British home market paid £168 per ton duty.²⁶ The new legislation offered considerable improvement, this sugar would now enter Britain at a duty rate of either £18.60 or £16.40 per ton depending on the lightness of its colour. This would be of no help to Gladstone, his base of operation was now the Jessore district of Bengal, and the clean pale coloured vacuum pan sugars of India, would all pay increased duty if their importation were to continue.

²⁴ P.P. XXXVIII (1857), *Consumption of Tea and Sugar* p.5

²⁵ *Ibid*, pp. 6-7.

²⁶ Noel Deerr, *History* Vol. 2 p. 467.

There is little doubt that the exploitation of the previous system of duties by the industrialised sugar producers in India was Sir Robert Peel's target. His curious remarks about Calcutta and sugar consumption in Scotland, which will be elucidated shortly, are, I believe, a product of lobbying by groups opposed to imports of industrial sugar from India and the East India merchants seeking to continue imports of traditionally manufactured *khand*.

Refineries recently erected near Calcutta and other places, for making a fine sugar very nearly equal to refined, but just so much under it as to be admitted at the other rate of duty. In addition, this has so far already superseded the use of the refined or lump sugar, which in Scotland none other hardly is bought [sic].²⁷

The main thrust of Peel's legislation grew out of a belief that lower import duties would increase consumption and lead to an improvement in revenues, thus help to reduce the almost continuous deficits of the late 1830s and early 1840s.²⁸ Reduced duties on sugar and other foods would tend to make food cheaper for the working class and thus reduce pressure on wages, and make it possible for additional sugar to enter the market without stimulating the economies of the slave colonies and infuriating the emancipationists.

This component of the bill reduced the sugar tariff while keeping slave grown sugar from the British market, given the political climate within his party and the groundswell of opposition to the entry of slave grown sugar, was both pragmatic and economically responsible.²⁹ For the industrialised sugar industry of

²⁷ *Parliamentary Debates* (1844) Third Series Vol. LXXV p. 1003.

²⁸ Lucy brown, "The Board of Trade and the Tariff Problem 1840-42," *The English Historical Review*, 68 (1953), pp. 394-421, p.397.

²⁹ The Act of 1846 was perceived by many in the anti-slave lobby as a betrayal of the emancipated colonies; see Duncan C. Rice, "Humanity Sold for Sugar: The British Abolitionist Response to Free Trade in Slave Grown Sugar." *The Historical Journal* XIII, 3 (1970), pp. 412-431.

Bengal and Madras, however, it came as a severe blow. They were a component of the imperial system of trade, and as such had every reason to be confident of Peel's support. It was therefore somewhat out of character when the prime minister spoke in pejorative terms of the capital invested in sugar manufacturing plants in India. Was he misinformed? Did he become confused due to pressure from the Scottish refiners, who sought to prevent East India sugar dominating their local market, while at the same time the East India lobby sought to exclude indigenous *khand* being classified as equal to white clayed.

While the main thrust of Peel's legislation was obviously to bring cheaper sugar to consumers. Of equal importance was the protection of the revenue base by preventing industrial sugar from entering Britain at the same duty as muscovado. Someone or some group had apparently convinced Peel that the large quantities of high quality sugar almost equivalent to refined, manufactured in the vicinity of Calcutta, was the same sugar being sold through the grocery trade in Scotland.³⁰

Peel was on the horns of a dilemma, how to balance the interest of the refiners and the East Indians, while retaining a measure of protection for West Indian planters still suffering from emancipation. *Khand* had been exempted from this legislation by using whiteness and grain or crystal size as the criteria by which the two higher grades were adjudged (fine *khand* consisted of a powdery whitish sugar with some crystalline material). West Indian muscovado, which in general had not improved over the previous twenty years,³¹ was under considerable threat from sugar produced by the vacuum pan process in Bengal, Madras and some West India plantations. Consequently, by 1844 the bulk of West Indian imports,

³⁰ *Parliamentary Debates* (1844) Third Series Vol. LXXV p. 1003

³¹ *Select Committee Sugar and Coffee*, Fifth Report p. 148, Evidence of H. Nebbs Browne, sugar Broker 23-3-1848.

low-grade muscovadoes were selling at the bottom of market.³² The entrance to the market of a greater variety of sugars, certainly called for a grading system that was more specific. A vacuum pan in the hands of an experienced operative was capable of producing sugar higher in crystalline content than much of the low West India muscovadoes, but at a similar cost. His speech, however, seems to indicate that his sympathies were with the West Indian planters and their older technology, not capital invested in the modern technology of the plants in India or Demerara:

The produce of these processes of manufacture, the result of the application of capital, are brought into our market in competition with the ordinary produce of the West Indian colonies at the same rate of duty.³³

Certainly, it was true that the vacuum pan factories were taking advantage of the old sugar revenue system, but did this loophole reduce import revenues significantly? Peel believed it did. The reality, however, was somewhat different. For example, in 1847 three years after his speech, of the 60,000 tons leaving the sub-continent only 20,000 were of vacuum pan sugar. In 1844 this total was much lower, it is true vacuum pan sugar was a large crystalline sugar usually purchased by the refining industry. However, only a small amount of this high quality sugar was imported, most of these imports were either value added or mixed with British refined sugar and re-exported, it was not sold to British grocers.³⁴ It is almost certain, however, that the sugar Sir Robert Peel reported as widely consumed in Scotland, was not the product of the vacuum pan, but high

³² Ibid, p. 141 and 149.

³³ *Parliamentary Debates* (1844) Third Series Vol. LXXV p. 1003.

³⁴ *Select Committee Sugar and Coffee* Fifth Report Evidence of H. Nebbs-Browne, p. 149 and 152. First Report evidence of H. Crosley p. 240. The best quality East India vacuum pan sugar yielded refined sugar equal to the best Cuban or Brazilian.

quality *khand*. Transport costs between India and Northern Britain were an important factor, this ensured supply at lower cost than in London and some other ports.³⁵ Unlike ships leaving London and other southern ports for India with virtually empty holds, those leaving the Clyde and Liverpool carried textiles outward-bound, their cargo capacity was fully utilised both ways. Consequently, the grocery shops of Scotland and North-western England had continuous access to *khand* at a slightly lower price than those of London; this concerned the refiners. The West Indians concern lay with the threat East India sugar imports posed in Liverpool and the Scottish sugar ports, a market they had dominated for over one hundred and fifty years. As we have seen above, Peel had held discussions with customs; in these discussions, he may have been acquainted with their views with regard to imports of East India vacuum pan sugar. Mr C. Dowling the Surveyor General of Customs was not at all favourable to East India vacuum pan sugar; but that it should all have been classified as equal to white clayed, not muscovado.³⁶ Equally, Peel's actions could have been those of a shrewd politician. At a particularly difficult time for the Tories, Peel was prepared to sacrifice a handful of factories in Bengal to placate West Indian planters, most of whom were using the older sugarhouse technology, avoid antagonising the emancipationists, while at once pleasing East India merchants by continuing to classify *khand* as muscovado.

Peel, however, knew nothing of the economics of sugar production in the Industrialised sugar factories of India, his disapproval of the capitally intensive Indian industry was based on the belief that much of its products were designed to thwart the revenue. In all probability he was poorly informed, and should not be

³⁵ *Ibid*, First Report p. 180 Evidence of Nathaniel Alexander, p. 180

³⁶ *Ibid*, t p. 247, Evidence of Mr C, Dowling Surveyor General of Customs.

we shall see in chapter 6 below, was already under pressure from factors domestic to the sub-continent.

At a time when many refineries were beginning operation or reaching peak production (Chapters 5 and 6 below) they were forced to change from a combination of liquored, sun dried clean sugar and muscovado to only producing muscovado. The strong grained Bengal yellow or Cossipore sugar continued to be imported as muscovado; they contained very little invert sugar and produced a high yield of refined sugar³⁹ and were considered comparable to the large grained Havana sugars.⁴⁰

Quite apart from the economics of refinery operation, the changes also brought to East India sugar imports, as Laurence Hardman⁴¹ explained, problems and delays with customs. From 1825 to 1845 customs surveyor's classified "British plantation" sugar as either muscovado or refined sugar, an easy task, the difference between the two grades was considerable. From 1845, however, they were expected to examine and grade sugar into three separate grades, the difference between good muscovado and some sugar classified as equal to white clayed lay in the eye of the customs surveyor, who as shown above, had no instruments to guide him. As a result, there were serious delays and many disputes between customs and importers. These delays caused serious financial loss to importers, particularly in late 1847 and 1848, a period during which prices were falling quite rapidly and delays of even of a few weeks led to considerable

³⁹ *Ibid*, Fifth Report, p. 152, Evidence of H. N. Browne, sugar broker. Browne points out that refiners purchase only the best colonial sugars for refining under bond, such high quality sugars can be mixed with refined sugar without further value adding. The refiner can gain as much as £1.05 per cwt just by reselling the sugar on the export market as refined.

⁴⁰ *Ibid*, First Report, p.239, Evidence of H. Crosley, engineer and sugar refining specialist.

⁴¹ *Ibid*, First Report, Evidence of L. Hardman pp, 85-88 passim.

reductions in the value of the consignment.⁴² Variation of judgement was inevitable; one batch might pass through as muscovado with an almost identical batch classified as white clayed. The legislative changes of 1845 tended to detract from the profitability of the manufacturing operations in British India, and helped to tip the balance toward their closure in the late 1840s. Perhaps the most significant problem associated with this change, was a tendency for sugar makers to produce sugar that fell easily within the category of muscovado, this led to a return to the pre-1836 days when muscovado rich in molasses lost value through draining or deliquesced on the long voyage to Britain.⁴³

East India Sugar in a Free Trade Environment 1846-65

It would be wrong to ascribe all the problems faced on the British market by industrialised East Indian sugar in the late 1840s simply to the 1846 Act. Firstly, India sugars were caught up in a general trade depression in the late 1840s, secondly, and very importantly, technical developments in British refining enable refiners to handle colonial sugar efficiently and profitably. This development not only had repercussions for industrialised East India sugar, but also because the cheaper British refined sugar resembled *khand* rather closely and was cheaper in price; it also had repercussions for the pre-industrial East India sugar.

The protected British market obviously offered a degree of stability and certainty to sugar producers of the British Empire who were privileged to have access to the market, in that it reduced competition from foreign sugar. The price falls in 1847-8, however, although laid at the door of the 1846 act, were not entirely due to the liberalisation of the British sugar market. They were due in

⁴² D. Morier Evans, *Commercial Crisis (1848)*, p. 145-6 Bengal low to fine white and brown as stated in the "Price Current," inclusive of duty, were £4.0 to £58 per ton January 1847, by December prices had fallen to £28 to £49.

⁴³ *Select Committee Sugar and Coffee*, First Report passim. Many of the planters and refiners appearing before the committee spoke of losses of quantity and quality of sugar in ship's holds.

large part to a trade depression in Western European and in colonial trade combined with a larger than usual cane harvest in the British West Indies and Mauritius. This combination of events reduced the value of all sugars particularly sugar produced in industrial sugar factories of British India.

The financial crisis of 1847 (which will be explained in chapter 6 below) caught the merchant community completely unaware,⁴⁴ as did the magnitude of the slump in sugar prices during 1847. The trade was, in fact, buoyant in 1845; a severe hurricane and a drought in Cuba devastated crops there and precipitated a rise in the price of British muscovado in the last quarter of that year from £30 to £35 exclusive of duty. Through 1846 the price held up even when the news broke in July of the admittance of slave-grown sugar.⁴⁵ Although foreign sugar could now freely enter, until the repeal of the Navigation Acts in 1849, sugar could not qualify for the lower import duty unless imported in British ships. Ship owners, having received no prior notice of the legislative change; and in view of shipping requirements due to the Irish potato famine, were unable to make British vessels available to bring sugar from Brazil or Cuba in 1846.⁴⁶

The first strong signs of volatility appeared in January 1847, due in part to the legalisation to allow the use of sugar in the distilling spirituous liquor. Rumours of this event had been strong the previous year, and large tonnages of unrefined *khaur*, (a low quality raw brown indigenous sugar) arrived in Britain in early 1847.⁴⁷ Brewers also entered the market, although the use of sugar in

⁴⁴ *Parliamentary Debates (1848)* Vol. XCV 1848 p. 382, the tone of the speech given by the Chancellor of the Exchequer was that the crisis of 1847-48, was not entirely unforeseen.

⁴⁵ *Select Committee Sugar and Coffee* 1847-48, Third Report, p. 78: Evidence of W. Scott, sugar broker.

⁴⁶ *Ibid.* See also P. P., 1854-55 Volume LVII *Account of Colonial Merchandise Imported, and Retained for Home Consumption and Exported from Britain 1841-1850*. The tonnage imported during 1846 actually fell from 291,044 in 1845 to 281,125 but sugar consumption in Britain rose from 242,830 in 1845 to 261,012 in 1846.

⁴⁷ *Select Committee Sugar and Coffee* 1847-48 Third report, p. 79, Evidence of W. Scott, sugar broker.

brewing was not yet legal.⁴⁸ These activities added to speculation (as it turned out the amount used by brewers and distillers was small).⁴⁹ Although this brought some volatility to the market, this would probably have passed quickly had it not been for the Sugar Act of 1846.

The general perception of the sugar duty legislation of 1846, according to merchants, sugar brokers and planters, was that there would be but one outcome, the immediate entrance into the British home market of large amounts of slave-grown sugar. This prediction proved to be correct but not quite as quickly as predicted, imports for home consumption in 1845 were 242,830; in 1846 they increased to 261,012 tons.⁵⁰ In 1847, however, 410,476 tons were imported with 288,975 tons retained. Of this increase, 120,449 was foreign sugar, 48,701 of which was retained, 14,686 tons were free grown, the rest slave grown (Appendix 1 Table 21). What made the expected flood of imports seem much greater was an increase in 1847 of sugar from Mauritius and West Indies; both had large cane crops. The combined imports increased by 75,241 tons over the previous year (Appendix 1, Table 38).⁵¹ Consequently, the predicted deluge arrived earlier than those that had an intimate knowledge of the trade might have expected. This deluge reduced the price of all grades especially sugar produced in the industrialised sugar factories in the sub-continent. Hardest hit were the grades that found a market in the refineries. The problem lay with the quality of the foreign sugar; particularly the yellow muscovadoes from Cuba, Porto Rico and

⁴⁸ *Ibid*, Fifth Report, p. 155 and p. 158, Evidence of H. Nebbs Browne, sugar broker.

⁴⁹ *Ibid*, First Report p. 35, Evidence of John Bagshaw M P. Bagshaw submitted a costing that indicated that grain was a cheaper source of raw material for distilling than sugar. Grain was cheaper for distilling by between 4 and .5 new pence per gallon depending on the season. *Ibid*, Third Report, p. 86, Evidence of William Scott. The advantages of using sugar instead of grain in distilleries were severely reduced through government regulations forbidding their simultaneous use. This compelled the distiller to clear one of these raw material before he could employ the other; a practice neither convenient nor cost effective

⁵⁰ P. P. (1854-55) Vol. LVII, *Foreign and Colonial Merchandise Imported, Retained for Home Consumption and Re-exported, 1841-50*.

⁵¹ *Ibid*.

Brazil. These large crystalline sugars had previously been refined and re-exported. From 1846, they competed on the British home market with the better quality sugars of the British colonies, and were available in large quantity. They invariably produced more crystallisable sugar than much British East or West Indian sugar.⁵²

Table V11 British Import Duties 1846-1854.

British Plantation Per ton.			Other British Territories			Foreign Sugar		
YEAR	EWC	NEWC	EWC	EBC	NEBC	EWC	EBC	NEBC
1846	£16.33	£14.0	£16.33	£14.0	£—	£24.4	£1.05	£—
1847	16.33	14.0	16.33	14.0	—	23.4	1.0	—
1848	15.20	13.0	£18.20	17.0	15.80	21.60	20.0	18.40
1849	14.00	12.0	17.0	15.600	14.45	19.80	18.45	16.0
1850	12.80	11.0	15.40	14.30	13.20	18.0	17.0	15.40
1851	11.60	10.0	14.00	13.00	12.0	16.20	14.40	14.0
1852	11.60	10.0	13.40	12.40	11.40	15.20	13.60	13.0
1853	11.60	10.0	13.0	11.80	11.0	14.0	13.0	12.0
1854	13.40	11.40	14.80	13.60	12.60	16.10	15.0	13.60
Full	Equalisation							
	EWC		NEWC		NEBC			
5/7/1854	£14.00		£12.00		£11	⁵³		

EWC: Equal to White Clayed, NEWC: Not Equal to White Clayed, EBC: Equal to Brown Clayed, NEBC: Not Equal to Brown Clayed.

Added to these problems was a trade depression in Europe and the British colonies 1847-1848 (Chapter 6 below). The result of which was that by late 1847 and for much of 1848, the value of East India muscovado was thirty percent lower and fine *khand* fifteen percent lower than in early 1847.⁵⁴ In more specific terms, based on 1847 gazette prices, good strong grained brown East India sugar, the product of the industrial sugar factories, fell from £37 to £31, indigenous *khand*

⁵² *Select Committee Sugar and Coffee* Third Report p. 81, Evidence of W. Scott, sugar broker. Scott claimed that good quality yellow imported Cuban, Brazilian and Costa Rica sugars were also classified as muscovado. These sugars would yield 95 pounds of refined sugar per cwt of raw, compared with the best British plantation sugar that yielded 78 pounds. In 1846, this in effect reduced the level of protection to ten new pence per cwt. As protection for British plantation sugar was phased out between 1846 and 1854, foreign sugar began to have a slight price advantage over British West Indian sugar. In *Ibid* Part 1 H, Crosley submitted evidence that by using a vacuum chest, a device in which sugar was placed on a tray and water percolated through it in a reduced atmospheric pressure, he could obtain 102 pounds of purified sugar from one cwt. of Havana yellow but only 80 pounds from the best British muscovado.

⁵³ Command Paper 8706 (1894) *Report of Customs and Tariffs*, p. 218.

⁵⁴ Morier Evans, *Financial Crisis*, (1849), pp. 145-7. The Price Current index of 1847 shows Bengal low to fine white and brown, inclusive of duty selling at £2.00 to £2.90 per cwt in January and £1.80 to £2.77 in March. By December, the range was £1.40-£2.45 per cwt.

from £56 to £49 and good quality *khaur* from £39 to £20 per ton, low quality *khaur* found no market.⁵⁵

The industrial sugar manufacturers in the sub-continent were probably unaware of the additional imports from the British colonies; their impression was of foreign sugar flooding the British market with prices falling. These conditions, when combined with a colonial depression and the virtually absence of carry-on finance in Bengal (chapter 6 below), convinced many entrepreneurs of their potential exposure to further losses. Many did not wait to see if the crisis would pass, instead they hastily cut their losses and closed their factories.

The period 1846-54 saw a rapid decrease in sugar imports to Britain from the industrial sugar factories of the sub-continent. *Khand*, however, was able to maintain its place in the grocery trade, but its future was also limited. The Act of 1846 ensured that the British market, the largest sugar-consuming nation in the nineteenth century, was abundantly supplied with colonial cane sugar at competitive prices. This coincided with a period during which the British refining industry was moving from predominantly open pan refining toward installing the new sugar house technology, much of which was developed in the European beet industry. These technological innovations brought improved productive capacity and the introduction of new grades of sugar to the domestic market at low prices.

Khand in the British Market 1836-65.

The main theme of this chapter up to this point has been of industrialised sugar exports from India to Britain and how changes to legislation affected this sugar. In chapters six and seven below, however, it will be clearly demonstrated that Industrialised sugar represented only about thirty percent of sub-continental

⁵⁵ *Select Committee Sugar and Coffee* First Report p. 36, Evidence of John Bagshaw M. P.

exports to Britain. With pre-industrial sugar holding the lion's share, a discussion of sugar in the British market would be incomplete if *khandisari* sugar was omitted.

It has been argued in previous chapters, that despite a raft of problems between 1790-c. 1855, a window of opportunity existed within the British domestic market for clean light coloured sugar, which could be sold directly to consumers without value adding. From the 1790s, this was an opportunity only partially exploited, in that better quality pale *khandisari* sugar established a niche market in the UK, particularly amongst the middle class and those sections of the working class with higher disposable income, such as artisans and mechanics. Having become an established taste among these societal groups, consumption of *khand* was almost certain to increase as these groups increased in size in response to employment opportunities created during the mature stage of the industrial age. The growth of consumption of pale-coloured pre-industrial sugar was due to such groups having a per capita income high enough to consume *khandisari* sugar as a substitute for the still expensive refined product. Simply put, *khand* was of better quality than most muscovadoes, but cheaper than British refined sugar.⁵⁶ This long established taste for *khand* was assisted in 1836 by lower import duties on East India sugar. From this date through to the late 1850s, large quantities of clean, fine grained, pale coloured *khandisari* sugar passed through the grocery shops of Britain onto the breakfast table of consumers. This clean pre-industrial sugar would retain its market share in Britain as long as it had a price advantage over refined sugar.

⁵⁶ J. C. Drummond and Anne Wilbraham, *The Englishman's Food*, (1939), pp. 394-5. The calorie intake and per capita income of artisans during the early and middle decades of the nineteenth century was much higher than that of unskilled or semi-skilled workers.

The high retail cost of refined sugar in Britain between 1792 and 1865 was due to a number of factors. Amongst which, were high import duty on refined sugar of £176 per ton, the raw material of refined sugar, colonial muscovadoes, was also subject to high import duties and the process of refinement produced a high level of low priced by-products. Infrastructure and labour cost and the continued use in many refineries of outdated technology until the mid 1850s, also contributed to the cost of refined sugar. *Khand*, however, could be consumed without further refinement,

More specifically, it was waste through caramelisation (sugar burnt through over-heating during refinement) called "bastard sugar" and the production of treacle an uncrystallisable or inverted sucrose, inherent to the processes employed in most British refineries for much of this period. The older furnace heated open pan technology was giving way to steam heated pans during this period, but the more efficient vacuum pans were not yet in general use.⁵⁷ The yield of refined sugar from open pans 1818 to 1855 was as follows; W. T. Brande, (an eminent professor of chemistry), recorded the yield of refined sugar from colonial muscovadoes in 1818 as 58 percent refined, 16 percent bastard sugar, 22 treacle and 4 percent waste.⁵⁸ Fourteen years later in 1832, Professor Andrew Ure, at the request of the government, tested colonial muscovadoes to ascertain the actual yield in connection with the benefits accruing to refiners from the system of drawbacks and bounties on re-exported sugar. His results were obtained using a melting pan that was theoretically, an improved design over that used by Brande, it had a double bottom, and consequently the melted raws were not exposed to the fierce heat. Because this indirect heat reduced caramelisation,

⁵⁷ Noel Deerr, *History*, Vol. 2 p.560. In 1800, there were some 100 sugar refineries in the London area, by 1827, however, only ten had installed vacuum apparatuses, the rest used the older open pan technology.

⁵⁸ William Thomas Brande, (1819), p. 358.

the yield of bastard sugar should have been lower. Ure's tests, however, revealed the following: - refined 55-65 percent, bastard sugar 14-19 percent and treacle 14-19 and waste 5 to 8 percent. It should be noted, good quality clayed Brazilian or Montserrat sugar gave a higher yield of refined sugar than any other colonial muscovadoes, at 70 and 73 percent respectively.⁵⁹ During the mid 1850s, in refineries where vacuum technology had not replaced the older open pans, the average yield of refined sugar and by-products had still not significantly changed. For example, the range of yields was refined 54 percent, bastard sugar 16, molasses 25 and waste 5 percent up to refined 61, bastard sugar 17, Molasses 19 and waste 3 percent.⁶⁰ The old open pan method, whether heated by steam or fiercer direct heat, offered little improvement: vacuum pan technology, as it replaced the open pans produced significantly better results. *Khand* did not incur these wastes and additional costs, it could be sold wholesale without value adding at £8 to £10 per ton cheaper than British refined (Appendix 1, Table 43).

Khand also offered other advantages to retailers, not only was it a cheap clean alternative to refined, it was also useful to mix with darker muscovadoes to enhance their value by giving them a lighter cleaner appearance. The market penetration of *khand* was also assisted by the expansion of the grocery trade, which from the early nineteenth century had become a separate branch of retailing. Grocers' customers were predominantly middle class, chandlers and tallymen (street traders who sold grocery and other items in small quantities, often on credit) served the working poor. This was a commercial environment that by

⁵⁹ P. P. 1833, Vol. XXXIII, *Report of the Experiments on Sugar Refining* by Professor Andrew Ure, pp. 7-12 passim

⁶⁰ Lock Warnford Charles C, Wigner G. W. and Harland R. H. *Sugar Growing and Refining*, (London, 1882). p 222

the 1830s had become very competitive;⁶¹ to survive and profit, grocers frequently “handled” sugar, a euphemism for mixing or adulterating sugar to enhance its value. *Khand*, as mentioned above, was often used to enhance or improve sugar quality and colour; other agents were used to adulterate muscovado and refined sugar. Amongst these were flour, sand and rice, all of which reduced the nutritional value of sugar.⁶²⁶³ Adulteration also had an effect on revenue. Estimates suggest that it reduced revenue collections by around £500,000 per annum with regard to sugar and £4 to £7 million when taken over all.⁶⁴

Competition and the broadening of the customer base through this period had led to increased product diversity. With regard to sugar, this meant the grocer would carry an increased range, amongst which were the ubiquitous brown muscovado, expensive large crystalline sugars from Grenada or Jamaica and powdered sugar, the peak demand for this sugar being the autumn preserving season.⁶⁵ *Khand* as a fine-grained, clean sugar was also ideal for this purpose.

With the growth of the grocery trade, and competition between grocery shops, promotional techniques became commonplace. These ranged from grocers use of high quality sugars as a “decoy duck” or in modern parlance a loss leader,⁶⁶ or another ruse, also quite common to high street grocers, was to display East Indian sugar candy in ornate glass jars claiming the candy to be typical of all East India sugars. Such trickery helped to engender a belief among the public of

⁶¹ John Burnet *Plenty and Want*, (London, 1966), 86.

⁶² Arthur Hill Hassal, *Adulteration Detected*, (London, 1857), p. 159.

⁶³ For the extent of adulteration by potato sugar and other non-sucrose adulterants in the middle decades of the nineteenth century see: Select Committee on Food Adulteration 1854-55. Arthur Hill Hassal, *Food and its Adulterants, Comprising the Report of the Sanitation Committee of the Lancet* (London, 1855) pp. 12-31 and *Adulteration Detected* (London, 1857). John Scoffern, *The Manufacture of Sugar in the Colonies and at Home*, (London, 1847). James Hill. *The Analysis and Adulteration of Food*, (London, 1881). John Burnet *Plenty and Want*, (London, 1966) chapter 5 pp. 72-90 passim.

⁶⁴ John Burnet, (1900) p. 87.

⁶⁵ Hoh Cheung and Lorna Mui, “Andrew Melrose,” *Business History*, p. 44.

⁶⁶ *Select Committee Sugar and Coffee Third Report*, p. 86, Evidence of William Scott Sugar Broker.

East India sugar being superior to British refined sugar.⁶⁷ Many sugar brokers, grocers and consumers believed it to be sweeter than British refined sugar.⁶⁸⁶⁹ This perception made it one of the most popular sugars in London and other larger urban centres.⁷⁰ The sweeter taste was due to two reasons; the small mealy texture of *khand*, which allowed it to dissolve more readily in tea or on the palate, and the absence in dry *khandisari* sugar of the less sweet grape sugar, a product of chemical changes in raw muscovado.⁷¹ This perception of *khand* was also helped through poor quality control at British sugar refiners, whose product was frequently contaminated by deposits of lime, these were due to carelessness at the refinery, such deposits of up to 2 percent by volume, reduced sweetness; at ten percent lime contamination sugar tastes bitter.⁷²

The popularity of *khand* in the grocery trade, undoubtedly contributed to the importation of a cheaper substitute, also of sub-continental origin derived from *gur*, this sugar did not go through the same process as *khand* (see appendix 3), but was cleansed of its dark colour by an application of aquatic weed. What remained was a clean but gritty sugar. Unlike *khand*, this sugar was not defecated or re-boiled, just cleansed of its molasses; the loss of crystalline

⁶⁷ John Scoffern, *Sugar in the Colonies*, (1847), p. 97.

⁶⁸ *Parliamentary Debates* Volume LXXVIII, (1845) p. 221. Mr. Hogg M.P., one of the spokespersons for the East India interests in the Commons, described *khand* as the refined sugar of the poorer and the middling sorts. Hogg pointed out that if the duty alterations of 1845 made this sugar liable to higher duty by virtue of it being adjudged as equal to white clayed, would, in effect, be a tax on the poor. "The rich," he said, "ate sugar refined from the strong-grained muscovado of the West Indies. They would escape the new duty, but the whiter sugars of East India, went into direct consumption by the lower classes. The poor were being taxed to the benefit of the rich."

⁶⁹ John Scoffern, (1845), p. 99. See also *Select Committee sugar and Coffee*, Third Report, pp. 478-9 Appendix No 6. The term sweetness with regard to sugar in the mid nineteenth century is a little problematical. H. Crossly, a refining engineer, uses this term when he means crystallisable content when he compares the lower yield of refined sugar from West Indian muscovado and East Indian *khand* with that of Havana and Brazilian sugar.

⁷⁰ P. P. Vol., XXXVIII (1857) *Consumption of Tea and Sugar*, p. 15. This report suggest that prior to the building of a railway system heavy food imports such as sugar were not widely consumed in areas distant from the main population centres.

⁷¹ J. Scoffern (1845), p. 32. See Also A. H. Hassall (1855), Hassall believed the dry nature of *khand* ensured that it did decompose and become contaminated with the less sweet grape sugar during the voyage, p. 16.

⁷² *Select Committee on Food Adulteration 1854-55*, Vol., VIII, Evidence of R. D. Thomson, pp. 94-5.

content must have been quite significant. This whitish small-grain sugar could be purchased at Calcutta in 1845-6, for £19.80 to £24.60 per ton, a much cheaper mixing agent than *khand*, which at that time cost £27.40 to £33.60 per ton.⁷³

With fine East India sugars both popular and profitable, it is small wonder that East India merchants were worried in 1845 that the legislative changes would see *khand* reclassified as white clayed or other refined. Concerns were raised during debates on this legislative measure, some members, clearly drawing on the experiences of the 1820s, claimed that the import of *khand* was to be restricted to prop up the ailing West Indies.⁷⁴ Sir Robert Peel, however, indicated that *khand* would not be adversely affected (above). The words colour, grain (crystal size) and saccharine matter (crystalline content) appeared in the legislation as the criteria by which customs adjudged sugar grades, this ensured that *khand* with its fine mealy texture, would continue to pass through customs as muscovado.⁷⁵

A number of factors favourable to the consumption of sugar occurred in Britain in the 1840s. These were the reduction in duty of 1845, all of which was passed on to consumers, the growth of the railway network⁷⁶ which allowed the cheap carriage of sugar into regional areas and the spread of the British retailing industry into smaller towns and rural regions.⁷⁷ Of equal importance to *khand* consumption was the stimulation to consumption through real wages growth,

⁷³ *Select Committee Sugar and Coffee*, First Report, p. 46, Evidence of Leonard Wray, sugar planter Tirhut.

⁷⁴ *Parliamentary Debates* (Third Series), Vol., LXXVIII, (1845), Mr Hogg MP p. 221-2.

⁷⁵ *Select Committee Sugar and Coffee* 1847-48, Third Report, p. 87, Evidence of William Scott, sugar broker.

⁷⁶ P. P. XXXVIII *Consumption of Tea and Sugar* p. 15. The report puts much weight on the facility railways offered for moving heavy goods such as sugar. Janet Blackman, "The Development of the Retail Grocer Trade in the Nineteenth century," pp. 110-117 *Business History*, Vol., IX No. 2 July, 1967, p. 114, J. J. G. Tuckworth, a Sheffield grocer, was able to bring sugar from the ports by rail for £0.03 per cwt or £0.66 per ton 1859-60.

⁷⁷ J. Blackman, p. 113. Circa 1830, a trend begins which saw the numbers of grocers in regional centres growing. These grocers, in addition to their own outlets developed wholesale outlets to supply other grocers in smaller rural towns or communities, outlets built-up by utilising carriers as commission agents.

particularly among the growing but less affluent section of the middle class, building artisans, fitters and mechanics (Appendix 1, table 45). Deane and Cole (1967), point out, that although price indices and data suggest an increase in real earnings, 1816-1840. There is a strong probability that actual increases occurred only in some industries, when all industries are included and unemployment factored in, the result is likely to show a decline.⁷⁸

Khandisari sugar during the 1840s, was a beneficiary of this growth in disposable income, but when the British refineries began to overcome the inefficiencies inherent in the open pan methods of refining and utilised developments in industrial technology, they too could take advantage of the growing purchasing power of the masses. From this time, the cost advantage began to swing away from pre-industrial sugar toward the industrialised product. Equipped with the new technology the British refining industry began to manufacture a type of sugar in quantities sufficient to fill this growing demand. Coincidentally or by design, this sugar known as "pieces and bastards" was a small-grained pale sugar not unlike the already popular *khand*.

This was achieved through the installation of improved vacuum pans and centrifugals, both a product of almost constant developments in sugarhouse technology during the nineteenth century. With this technology they could effectively process cheap raw cane sugar, particularly from the low quality sugar of Brazil, Manila, China and, ironically, India.⁷⁹ The centrifuge enabled them to throw off molasses and re-cycle them these by-products were previously sold separately and cheaply as treacle.

⁷⁸ Phyllis Deane and W. A. Cole, *British Economic Growth 1688-1959*, (London, 1967) pp. 26-7.

⁷⁹ George Martineau, *Sugar; Cane and Beet: an Object Lesson*, (London, 1910), p. 80

The wide variety of cheap colonial cane sugars available post 1846 could be selected for their crystalline content or cheapness, immersed in water and thoroughly mixed by mechanical stirrers. After heating to a temperature just below boiling point, the liquor was passed through a bag filter to remove coarse particles, then through bone charcoal filtration where it emerged as clear liquor. It was then boiled to crystal under vacuum. As George Martineau explains: "British refiners, unlike their European competitors, ignored the [traditional] process of defecation [the removal of dirt and other impurities in separate heated cisterns] and threw the whole weight upon the process of charcoal filtration," this allowed the refining process to be speeded up considerably.⁸⁰ The crystallising sugar, when adjudged ready by the pan man, was forced from the pan using the air pump, into a vessel heated by a steam jacket (still frequently referred to as the cooling pan). Here mechanical agitation encouraged further crystallisation. The sugar was then decanted into centrifugals, which separated any remaining syrups from the crystals. This sugar, when dry, was a strong crystalline white sugar, ready for consumption by the more affluent sections of society.⁸¹ To produce cheaper sugar a similar process was followed with the syrups obtained from the refined sugar added. The new methods and technology allowed the refiner to produce a fine-grained whitish sugar for the mass market with syrups an integral part, thus was wastage reduced to a minimum. The older method, as shown above, produced large amounts of by-products. The yield of good quality consumable sugar produced from raw sugar during the early 1850s was around

⁸⁰*Ibid*, p. 82.

⁸¹For the development of British refining technology 1850-1875: see William Reed *Sugar Yielding Plants*, (1866), Charles G. Warnford Lock, G. W. Wigner and R. H. Harland, *Sugar growing and Refining*, (London, 1882), George Martineau, *Sugar Cane and Beet an Object Lesson*, (London, 1910) and *A Short history of Sugar* (London, 1917), Gill G. Houghton, "Sugar Refining" in G. Philips Bevan (ed), *British Manufacturing Industries*, pp. 104-135 (London, 1876), John A. R. Newlands and B. E. R. Newlands, *Sugar: A Handbook for Planters and Refiners*, (London, 1909).

64 percent, by 1866 this had increased to over 82 percent.⁸² By 1860-61, sugars such as "pieces and bastards" significantly altered the traditional sales patterns of grocery sugar in Britain.⁸³ No longer was it profitable to sell the clean cured pre-industrial sugars produced in the sub-continent.⁸⁴ Grocery sugar consumed by the growing numbers of the working and lower middle class consisted predominantly of "pieces and bastards," while the more expensive white refined and popular primrose yellow sugars were consumed by the upper and middle classes. The latter came into being through the newly developed boiling of sugar at a low temperature in improved vacuum pans. Duncan, a sugar refiner of Greenoch and London, was the pioneer of this technique.⁸⁵ Developments of this nature during the 1850s had the effect of considerably reducing consumption of fine East India *khand* in the UK. The clean pre-industrial sugars were losing their place in the British sugar bowl; they were replaced by new sugars a product of the new technologies employed by British refineries. This trend is obvious from the import statistics: low browns become the predominant sugar from 1859 (Appendix 1 Table 22).⁸⁶

The British sugar market did not lose its volatile nature post 1846. Sugar duties and therefore the price of refined sugar, gradually fell and British refined sugar became cheaper than *khand*. Two other events would lead to the virtual

⁸² Philippe Chalmin, *The Making of a Sugar Giant, Tate and Lyle, 1859-1989*, (London, 1990), p.55

⁸³ Dr A. H. Hassal in *Adulteration Detected*, (1855), described one of the samples he was testing, which was almost certainly *khand*, "as: pale straw coloured, not very dry, fine grained, the crystals being very small." James Hill *Analysis and Adulteration*, (1881) p. 114: described pieces and Bastard thus: [These sugars] are caused to crystallize in very small crystals, and thus to hold a comparatively large percentage of water as well as invert sugar. They possess much less sweetening power than raw sugar, but having generally less colour are erroneously supposed by the public to combine cheapness with superiority of quality.

⁸⁴ A North Combes, *The Evolution of Sugar Cane in Mauritius*, (Reduit, 1937), pp. 42-3. The changes in the duty regime from 1854 had a detrimental effect on sugar produced in Mauritius; a fair proportion of sugar was equal to No. 19 Holland or almost equal with refined sugar. Consequently, sugar producers in Mauritius tended to send muscovado sugar to Britain; their high quality sugar went to France and Australia and after 1870 India.

⁸⁵ George Martineau, (1910), p. 82.

⁸⁶ P.P.1868 -69 (191) LVI.489 The two coarser grades 3 & 4 were 93 percent of all East India imports in 1868 P.P. 1870 (203) LXI.559. During 1870, grades 3 & 4 came to 92 percent of all East India imports.

elimination of all but small amounts of *khand* from the British breakfast table.⁸⁷ The first was the American Civil war a conflict that brought disruption to the important textile industries and speculative trading in sugar, both of which tended to destabilise the market. The war and the attendant shortage of cotton, severely depressed disposable incomes and changed the sugar consuming habits of the workers in the textile and allied industries, in that skilled and semi-skilled textile workers turned to cheap raw muscovadoes.

A short-lived recovery in the wholesale prices occurred in late 1863 and early 1864, when sugar dealers speculatively retained large stocks in the belief that crops in the West Indies, America and Europe would fall well short of demand.⁸⁸ The speculation proved expensive, for on November 8th 1864, again with no warning, the British government signed a sugar convention with France, Belgium and the Netherlands, agreeing to control the level of drawbacks and import duties—this agreement was not ratified or implemented.⁸⁹ The short-term affect was a fall in sugar prices, with many sugar traders left holding large stocks of sugar on a falling market. The situation deteriorated further for sugar traders when the Chancellor announced a reduction of £4 per ton in the duty on refined sugar. This precipitated a further fall in prices of £6 to £10 per ton on all grades of sugar. Cheap beet loaf sugar from Europe began to come on the British market in large quantities, and the grocery trade took advantage of this and built up large stocks of these imports.⁹⁰ By 1860-1861, European beet sugar production was

⁸⁷ Command Paper (1884) *Report of the Sugar Trade*, p. 40 indicates that in 1862 35,966 tons of East India sugar is admitted for home consumption. P. P. (1867-68) Vol. LXVI shows 37, 321 tons of second, third and fourth class East India sugar being refined in Britain that year. Sugar stocks left over from the previous year account for the discrepancy. The figures show that virtually all sugar from India that year was low quality brown sugar.

⁸⁸ William Reed, (1866), pp. 160-1.

⁸⁹ P. P. 1867 LXVI, Declaration of the Results in Sugar Refining in Pursuance of Article 11 of the *Convention of November 8 1864 Between Great Britain, Belgium, France and the Netherlands*.

⁹⁰ W. Reed, (1866), pp, 161-2.

some 332,000 tons. This grew rapidly in the next five years to be 659,000 tons by 1865, contributing further to the lowering of retail sugar prices;⁹¹ in 1864 for example it could be loaded at £28 to £28.40 per ton.⁹² From 1864 there was little to restrain beet sugar imports from Europe; the price of raw sugar fell almost continuously: by 1864 it was worth £30 a ton, by 1875 it was worth only £21 and by 1895 a mere £9.60 per ton.⁹³

The shift from consumption of raw to refined sugar increased in proportion to the large quantities of imported European beet sugar, from 6.19 pounds per capita in 1872 to 40 pounds in 1895. In the same period the price of refined sugar in Britain fell from £37.6 to £13.4 per ton.⁹⁴ The price of *chini* in Azamgarh, however, continued to rise, it cost £21 per ton from 1863 to 1866 and increased further from 1866 to 1874 to £22.80 per ton. At a time when world sugar prices were decreasing, those of sugar *hauts* (markets) of the North West Provinces of India were increasing.⁹⁵ In the internationalised sugar market of the UK *khand* could not compete, consequently it disappeared from the grocery shelves of Britain during the second half of the nineteenth century.

After 1864 imports of mostly European refined beet sugar increased progressively until by 1873 they had reached 100,000 tons (Appendix 1 Table 26).⁹⁶ East India sugar imports to Britain went in the other direction: of the ever-shrinking total *khand* became a tiny fraction. Some 9,065 tons of East India sugar entered Britain for home consumption in 1868: of this, only 853 tons were first or

⁹¹ P. G. Chalmin, "Important Trends in Sugar Diplomacy Before 1914," pp. 9-20 in Bill Albert and Adrian Graves (eds.), *Crisis and Change in the International Sugar Economy 1860-1914*, (Norwich and Edinburgh, 1984). P. 10 Table 2.2.

⁹² William Reed, (1866), p.162-3.

⁹³ Command Paper 8706 *Report of the Sugar Trade* 7 August 1884 p. 26 Table 1 p. 40 Table xiii Compiled by Messers Rueb & Co

⁹⁴ J. A. R. Newlands and Benjamin E. R. Newlands, *Sugar: A Handbook*, (1909) p. 928-9.

⁹⁵ J. H. Mackintosh, *Report of the Settlement Operations in Azamgarh*, (Allahabad, 1881) p. 161 paragraph 584.

⁹⁶ Command Paper 1884, *Report to Board of Trade on the Sugar Trade* p. 40.

second grade;⁹⁷ of the 16,091 tons entering in 1870, only 688 tons⁹⁸ were of the two highest grades. Virtually all imports from India during the last three decades of the century were low-grade *khaur*, much of which went directly to the breweries. When in 1877-8 and 1882 yields were poor in both the West Indies and among the French beet crops, sugar from the sub-continent was again in demand, consequently imports increased to 59,050 in 1877 and to 72,479 the following year. By 1882, they had receded once more to below 20,000 tons (Appendix 1, Tables 26 and 27). By 1870, the sub-continent was perceived by British sugar merchants as a reserve supply to be drawn on when shortages occurred elsewhere.⁹⁹

In chapter four, the discussion will turn to the sub-continent examining the attempts of the early sugar pioneers to create a sugar industry circa 1787-1809 based on West India technology. There will also be an extensive discussion of the land ownership and economic policies of the Company government, policies that not only contributed to difficulties in this first period but also had a significant effect on industrial sugar makers 1838-1853.

⁹⁷ P. P. (1868-9), Vol. LVI.

⁹⁸ Command Paper (1871) Vol. LXII.

⁹⁹ W. C. Lock et al., (1882), pp. 639-40.

Chapter 4

The Introduction of West Indian Sugar Making Technology in Bengal and Madras c. 1776-1810 and Company Economic Policy in the Emerging Colonial State.

The discussion in this chapter is of the sub-continent, where it will be argued that the fundamental key to an explanation of the story of East India sugar and its role in the British market place is to be found. From 1776 through to circa 1810, some long-term European residents of India and others with sugar making experience in the West Indies attempted to create a European owned sugar industry in Bengal and Madras. They were attracted by reports of the fertility, an abundance of cheap labour. They were also offered some encouragement from the East India Company. This took the shape of help in finding suitable land, a promise that machinery would be shipped from Britain free of cost, and any sugar they produced would be purchased by the Company, at an agreed price. In the sub-continent, European sugar pioneers would find many difficulties to overcome, such as, a harsh climate, long internal distances over which to transport their produce and health difficulties as they sought to create and manage sugar plantations. Nevertheless, they were confident in their ability to create in India a new British sugar bowl, or, according to one report, to manufacture enough sugar to supply the whole of Europe.¹ Such confidence, however, was soon to dissipate. By the late 1790s, the hopes and expectations of sugar pioneers, East India Company directors and Company servants had foundered on a combination

¹*E. I. S. App. 1*, Report of the Committee of Warehouses, pp. 2-24 passim. The report suggests Bengal may be capable of producing sufficient sugar to meet the consumption needs of much of Europe.

of factors, the sum of which added up to the economic impossibility of creating a sugar industry using West Indian technology in late eighteenth century India.

In addition to the many difficulties involved in the establishment of such an industry, the 1790s were also a period of transition for the British in India. In this decade, the British administration sought to steer Bengal from what had proved to be a predatory mercantile state into what was known as its early colonial phase. Such a period would prove to be a melting pot of ideas and new policies, many of which were implemented in the hope of overcoming some of the British excesses in the administration of Bengal and to consolidate British rule. These changes would also help to shape the future of the nascent European sugar industry, as would economic problems related to the commercial imperatives of monopoly, the cost of freight and shipping shortages in wartime and high import duties in Britain, the effect of which has been described in Chapters one and two above. However, policy changes domestic to the Company's Indian territories would have a long-term and detrimental affect on the Indian sugar industry. Among these were the formation of land policy, rigid Company control over the economy, and government measures to contain and control European settlers and merchants.

In this chapter, it will be argued that European enterprise, even when financially supported by the Company, was unable to cope with the climatic and geographic problems and costs of producing sugar in the sub-continent. Much of the sugar produced was poor to medium quality muscovado, a product difficult to produce and ship to Britain at a profit, even when the British market was at its most favourable between 1793 and 1800. It will also be argued that the process toward settled government of the Company's Indian territories brought with it the need to seek the cooperation of the holders of traditional land tenure, a group on

whom the Bengal Permanent Settlement of 1793 was intended to confer the status of improving landlords. This period of transition also brought into being a policy that made land ownership difficult for Europeans and effectively prevented them from gaining permanent title to land on which to create plantations. Consequently, they lacked collateral and were unable to borrow the funds necessary to build a sugar industry, which by its nature was capital intensive.

It will also be argued that although the Company's India monopoly ceased in 1813 and East India trade grew significantly the legacy of earlier policies and the Company's continued reluctance to encourage investment by European planters in capital-intensive agriculture ensured the sugar industry would be almost entirely composed of small-scale peasant producer cultivators and would remain a pre-industrial industry. This, in turn, led to a perception among senior policy makers in Britain that an indigenous industry operated on a pre-industrial basis was incapable of producing significant amounts of sugar for the British market, a perception that strengthened the argument of those who favoured the continuation of the virtual sugar monopoly of the West Indian colonies.

European Pioneers Bengal c.1776-1810.

Although the story of European involvement in East India sugar became a serious topic of discussion in the East India Court of 1792, the idea of direct European involvement in cane growing and sugar manufacture first gained some prominence in a submission to the Calcutta Supreme Court by the Bengal Commercial Society in May 1776.² The document had much to do with the desire to resurrect a once thriving sugar trade from Bengal to Western India, the Persian Gulf and Red Sea ports. The submission claimed that, despite the decline in the

²P. J. Marshall, "The Bengal Commercial Society of 1775: Private British Trade in the Warren Hastings Period," *Historical Research*, Vol. XL11, No. 106, (November, 1969), pp. 173-187. p. 181.

old trade in sugar, Bengal's fertile soil was still capable of growing large quantities of good sugar. The blame was placed on the "primitive" practices of Bengali cane cultivators and sugar makers. The suggested remedy was: "European involvement in the cultivation and production of sugar, using West Indian cane cultivation and sugar making techniques."³ A group of merchants, all members of this Society and backed by considerable capital resources, set about the task with much enthusiasm. Their efforts were representative of one of four fairly well known attempts by Europeans to grow cane and manufacture sugar in Bengal on West Indian lines, during the last quarter of the eighteenth century.

The proposal of the Bengal Commercial Society in 1776, embraced enthusiastically by the government in Calcutta, received a grant of 10,000 bigahs (3,300 English acres) in Nadia. They invested capital in buildings, introduced West Indian crushing, and sugar making technology.⁴ Their endeavours, however, proved a costly failure and contributed to the bankruptcy of several prominent Calcutta merchants.⁵ The cane at Sukhsagar "Ocean of Delight," near Santipore, was planted on uncultivated land infested by termites, which resulted in severe crop losses. The lack of local agricultural knowledge, combined with mismanagement of the manufacturing facility, contributed significantly to the project's failure.⁶ With the financial collapse of many of its backers, the cultivation of cane by West Indian methods ceased. Mr Charles Croftes, an East India merchant and one of the original investors, kept the works in operation for several

³*E. I. S. App. 1*, Report of the Committee of Warehouses 26 February 1792, pp. 12-16 passim.

⁴P. J. Marshall, *Commercial Society* (1969), p.182.

⁵*Ibid*, p.183. P.J. Marshall's works have been consulted with regard to the Calcutta Society and at other times in this thesis, much of the information in this and other chapters, however, is original research from Company minute books and District and Regional Reports from nineteenth century India in the Oriental and India Office records of the British Library. The four volumes of *East India Sugar* (1822) have also been researched in depth.

⁶*E. I. S. App. 1* p. 16 Report of the Committee of Warehouses

years. The plantation successfully produced some sugar and rum, but this time the canes were purchased from local cultivators.⁷ In 1792, a Mr. Barretto, a free merchant of Portuguese and Maratha origin, became the proprietor⁸; advertisements for rum at ten percent under London proof, for £0.12 per gallon in casks and £0.10 per gallon without casks appeared in the Calcutta press.⁹ The Committee of Warehouses (a standing committee within the Company structure appointed by the Court to enquire into the commercial viability of promoting the growth and export of sugar from the East Indies to Britain), when preparing their recommendations to the East India Court, took note of the continued operation of this works. They took this as an indication that Europeans could successfully manufacture sugar and by-products in Bengal, using West Indian methods.¹⁰ Two other European establishments began to manufacture sugar during the 1770s. The first was at Umnepur in Twenty Four Pargannahs adjacent to the delta of the Ganges, where in 1776 four Company servants set up a sugar plantation. The plantation apparently showed early promise. By 1790, however, this too ended in failure, probably because of soil salinity.¹¹ Mr. James Christie, a private merchant, that is to say not in the employ of the Company, also attempted to establish a plantation, sugar works and rum distillery on a Company grant of 3,000 acres at Apail, in the district of Dinajpur in North-eastern Bengal. In common with the other two attempts, he found India a difficult environment in which to build an industry reliant on alien technology. He too failed and

⁷*Ibid*, p.106, Bengal Board of Trade Consultations 4-9-1792.

⁸*Ibid*, p. 153, Letter from the Resident at Santipore 13-12-1792.

⁹ Anonymous, *Calcutta Gazette* August 1792.

¹⁰*E.I.S, App.* 1 p. 16, Report of the Committee of Warehouses 29-2-1792.

¹¹*Ibid*, p. 179, Bengal B. O. T. Consultations, 13-8-1792. A Report from the Collector of the Twenty-Four Pargannahs. The Collector believed cane grown in that district was affected by the saline nature of the soil and was generally unfit for sugar making. The juice of the canes was usually distilled into native arrack or made into crude sugar for local consumption.

apparently "died in distress."¹² These early attempts were not directed at the British market but at recapturing the markets served by the country trade (chapter one above)

Lieutenant John Patterson, probably the most widely known of the sugar pioneers in India during this era (below), also with West Indian experience, went to Bengal with the blessing of the Company. The transactions with this individual in the East India Company archives are lengthy and, as we shall see, indicative of his importance as a marker to the introduction of West Indian technology.¹³ He too failed, after trying initially near Banaras and later at Beerbhoom¹⁴ in the district of Soonamooky, where he established a sugar works in 1792.¹⁵ No actual detail of his operation appears to have survived. His factory was able to begin the manufacture of sugar in 1794, but he apparently lacked the money to offer cash crop advances to cultivators. To overcome this, he requested and received a loan from the Board of Trade in Calcutta of Rs. 25,000 (£3,125) in December 1794.¹⁶ Paterson, however, died in September 1797 before he actually supplied any sugar to the Company. On his death, his debts to the Company and private individuals became the responsibility of General Stibbert, his business associate and guarantor.¹⁷¹⁸

The enterprises above are perhaps the best known or the most prominent in contemporary records. There were, however, many others. Some rate but a

¹²P. J. Marshall, "Commercial Society," (1989), p. 185

¹³*E. I. S.*, Appendices 1 and 2 passim

¹⁴*Ibid App.* 2 p. 10, Bengal Commercial Consultation 15-4-1795. The source of this reference is a letter written in 1795 as confirmation by the Directors in London of a decision made in Calcutta that Captain Paterson was allowed to set up his plantation at Beerbhoom instead of Banares originally agreed.

¹⁵*Ibid*, p155. 14-2-1792, Letter to the Board of Trade from the Resident at Soonamooky.

¹⁶*Ibid*, p.242, 29-12-1794.

¹⁷*Ibid.* 27, 30-12-1797.

¹⁸*Ibid*, App. 1, p. 39. On March 1802, the Board of Trade in Calcutta noted that General Stibbert, through his solicitors, was still discharging the debts of Patterson.

single mention while others remained in business for quite long periods. Amongst this group was Mr. Robert Heaven, "a gentleman with some thirteen years experience in the West Indies." He also came to India with the approval of the directors, planning to grow indigo, cotton and sugar cane, and manufacture sugar.¹⁹ He does not appear again in the records. It is possible he was amongst the anonymous group of Europeans mentioned by the Resident at Patna in 1792-3, who records the presence of three European establishments, along with two other European sugar works at Arrah and in Tirhut.²⁰ A report from Rungpore in 1793 also mentions the presence of another five European sugar factories.²¹ Another pioneer was James Hanson Keene; he too was said to possess extensive knowledge of sugar making in the West Indies. He came out in 1794 with the intention to set up a works,²² but also failed. By 1801, we find him working in the Calcutta sugar warehouse, assisting Mr. Horsley, the Company's sugar inspector.²³

One of the few apparently successful introductions of West Indian technology into India during this early period appears to be the sugar works and plantations at Achipore and Fort Gloucester, both of which belonged to a Mr Lambert of Lambert, Ross and Company, substantial East India merchants. He had been resident in India for many years.²⁴ Unlike many of the establishments mentioned by the various residents, here we are afforded an inside view. The refinery had a train of copper pans to evaporate the juice, using milk as a catalyst

¹⁹*Ibid*, App. 3 p. 1, Letter to the Bengal Government from Directors in London 27-3-1787.

²⁰*Ibid*, App. 1 p. 157, 4-9-1793, Letter from Resident at Patna to B.O.T. Calcutta.

²¹*Ibid*, p. 159, 22-9-1793, Letter from Resident at Rungpore to B.O.T. Calcutta.

²²*Ibid*, App. 2 p. 8 24-4-1794.

²³*Ibid*, App. 2 pp. 13-14, 15-4-1801.

²⁴*Ibid*, App. 1 p.244. Extract from Bengal Public Consultations 8-9-1790. Lambert, a senior East India merchant and sugar planter, wrote to Cornwallis in 1790 on the subject of duties paid by Bengal sugar in Madras and Bombay

to bring impurities to the surface and limewater to control acidity. When the sugar was at the point of crystallisation, it was poured into conical moulds, similar to those in use in the West Indies. After cooling, the stopper in the bottom of the cone was removed and the molasses drained off. Much of this sugar was exported as muscovado, but some was also clayed to remove some of the colouring matter (see Appendix 6 for a description of this process).²⁵ Low prices and high transport costs undermined the profitability of the venture.

The Introduction of West Indian Sugar Technology in Madras Presidency c. 1787-1810.

In the Madras Presidency, the East India Company began to encourage its collectors and agents to become involved in production of sugar for export from 1795. The main areas of activity were Ganjam (Gangam) at what was then the extreme north-eastern coastal end of the Presidency, Vizagapatam, 150 kilometres down the coast, Masulipatam (Bandar) between the deltas of the Godavery and Krishna rivers, and in the southern regions of the Presidency near Salem. The latter was some 270 kilometres from Madras city and 150 kilometres inland from Cuddalore (map 2 page 134).

In the southern regions, particularly the districts of Baramahal and Salem, there appears to have been a flurry of activity associated with sugar production by the mid 1790s. Here both private merchants²⁶ and Company agents were involved in sugar and rum manufacture.²⁷ In 1796, the capacity of this area to

²⁵*Bengal Sugar: An Account of the Method and Expense of Cultivating Sugar Cane in Bengal*, (London, 1794) in *Ibid*, App. 1, p. 78.

²⁶*Boards Collections 1478 to 1483 1796-1800*, Vol. 67 *Oriental and India Office Collection British Library*, (hereinafter OIOC) Letter to Alexander Reade, Superintendent of the Bramahal and Salem Districts, from C Witheral. This letter discusses a group of sugar planters and their sugar factory and rum distillery in the Salem district.

²⁷*Boards Collections 1478 to 1483 1796-1800 vol. 67*. OIOC. Extract of a Letter from Collector to Revenue Department Fort St. George 4-7-1796.

produce sugar was brought to the notice of the Revenue Board in Madras: a letter observed that "the local red sugar cane and another taller bamboo cane produced good quality sugar," a sample of which had been sent to the Board by a Mr. Lyte.²⁸ By early 1796, however, the Company was already expressing concern over the extent of its financial commitments to sugar production in this area. The Board of Revenue wrote to the Collector, Alexander Reade, reminding him that he had a personal stake in some of the sugar ventures and instructing him to send his accounts to Madras for examination; the board apparently wanted to inquire into the extent of land revenue invested in sugar ventures. The letter also expressed concern that the Collector was concentrating on European enterprise, pointing out their strong preference for the involvement and encouragement of local cultivators in sugar cane production.²⁹ There is a note of disquiet in the correspondence between the Board and the collector, which hints of a suspicion of corruption.

Already in the 1790s, problems with the operation of exogenous technology, similar to those that would become manifest in the later phase 1838-46, were making an appearance. In 1796 Reade wrote to the Board of Trade from Salem, complaining that pinions and gudgeons on West Indian mills constantly broke, as did locally made iron replacements. This problem led to Europeans falling back on the indigenous mills, which crushed cane at a slower rate and resulted in reduced sugar production; the hardness of the native canes was apparently the cause of these breakages.³⁰ The enthusiasm of the Board of Trade in Madras for sugar production in the Salem district quickly evaporated and

²⁸*Ibid*, Extract of the Proceedings of the Board of Revenue Fort St. George 4-7-1796 OIOC.

²⁹*Ibid*, Extract of the Proceedings of the Board of Revenue Fort St. George 27-1-1796 OIOC.

³⁰*Ibid*, Letter from the Collector of Bramahal and Salem Districts to the Board of Trade Madras 21-11-1796 OIOC.

by 1797, they sought to end their involvement. Mr Lyte, the superintendent, was asked if he wished to purchase the works and the associated agreements with cane cultivators, at what was virtually his own price.³¹ As it turned out, the sugar made at Salem was of high quality. The geographical location, however, was not appropriate. When in late 1797 the Board of Revenue received news that the Cauvery River was not navigable, the region was deemed too distant from the sea to be economically viable.³²

At Vizagapatam, some 600 kilometres up the coast from Madras city, the Company also became directly involved in sugar making. A sugar works equipped with a West Indian cane mill and a train of pans was erected. Mr Brown, the Collector, kept a close watch on proceedings and Mr Parkinson the superintendent of the works, secured cane for the mill through cash crop advances to local cultivators. Brown wrote enthusiastic letters to the Board of Trade in Madras, explaining that this region had the capacity for large-scale sugar production. He urged the Company to invest more capital,³³ even suggesting in 1798 that they purchase a steam engine.³⁴ By 1799, however, the Board of Trade in Calcutta expressed concern about the level of capital expenditure at Vizagapatam. They pointed out that on the appointment of Mr Parkinson as superintendent, he had been given specific instructions about the extent of "experiments" with rum distillation and instructed to place the strongest emphasis on improving indigenous sugar making techniques. His activities with regard to rum had apparently outgrown the Company's initial intention; the large-scale

³¹*Ibid*, Extract of a Letter to the Madras Government 11-11-1797 OIOC.

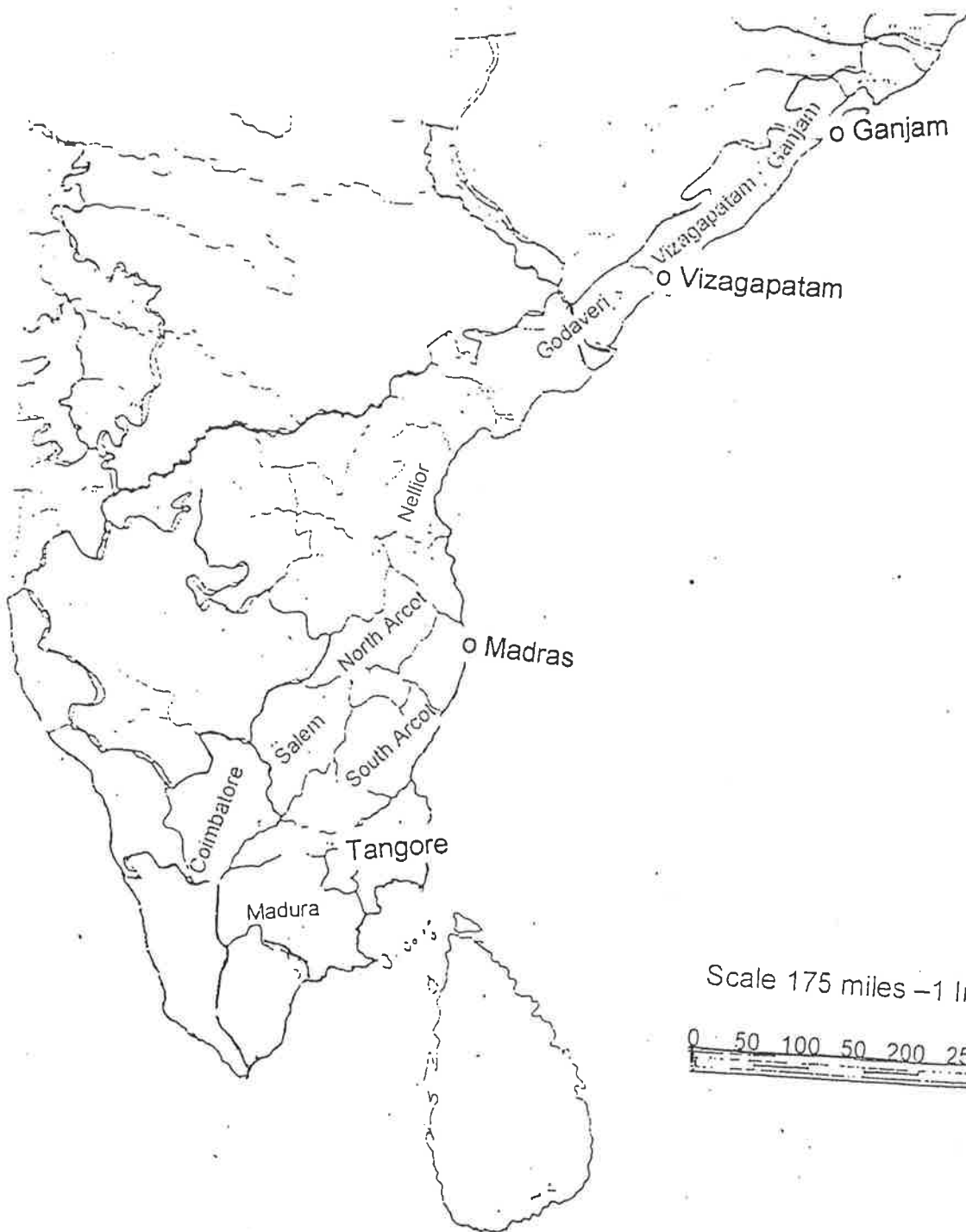
³²*Ibid*, Extract of the Proceedings of the Board of Revenue at Fort St. George 21-12-1797 OIOC.

³³*Boards Collections 1097-1099 A 1797-1799 Vol. 47*, Extract of the Proceedings of the Board of Revenue Fort St, George 2-9-1798 O.I.O.C.

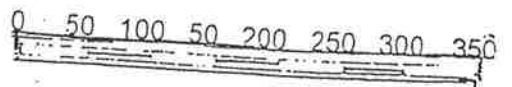
³⁴*Boards Collections 1097-1099 and 1799-1800 Vol. 47*, Letter from W. Brown Collector Vizagapatam to Board of Revenue Fort St. George, 12-9-1798 O.I.O.C.

District and Divisions Madras Province

Drawn By F. C. Danvers, India Office-1889.



Scale 175 miles - 1 Inch



exports of rum to Britain that he envisaged were not to their liking. By 1799, due either to the shift in sugar policy in Bengal (below), or early sugar ventures in Madras showing little sign of success, the Board of Trade in Calcutta instructed Madras that the development of the sugar industry in the Province "be left to private individuals."³⁵ The Vizigapatam factory was wound up in 1800, Mr. Parkinson received instructions to cease sugar making, and was invited to buy the sugar works.³⁶ He, however, could not raise the capital; the crushing mill, sugar pans and rum stills were sold at public auction.³⁷ Nonetheless, sugar production by Europeans in Vizagapatam continued; but the Company's involvement was now indirect. The collector of revenue made available some working capital to assist Europeans with the payment of cash advance payments to peasant cane cultivators.³⁸

Although, as the Company records show, there was a growing ambiguity toward West Indian sugar makers in Bengal (as we shall see below), some East India Company directors in London were still encouraging Europeans to try their luck in India. Robert Campbell was one of these. He went out to Madras in 1796³⁹ to establish a sugar works and to improve cane cultivation near Coimbatore situated some 160 kilometres from the west coast city of Calicut.⁴⁰ Here, and later in South Arcot at Chidambaram, 150 kilometres west of Madras, he encountered difficulty from peasant cane cultivators when attempting to

³⁵ *E. I. S., App. 2* p. 24, Bengal Revenue Consultation, 31-10-1799, Letter from Revenue Branch Calcutta to Fort St. George Madras.

³⁶ *Ibid., App. 1*, p. 263. Proceedings of the B.O.T Fort St. George, Letter to Governor in Council June 1800.

³⁷ *Ibid.*, p. 264, Fort St. George Revenue Consultations 7-6-1800.

³⁸ *Ibid.*, 7-6-1800, Order of the Government with Regard to Vizagapatam Sugar Works.

³⁹ *Boards Collections, 1097-1099, 1799-1800*, Extract of a Commercial Letter to Fort St. George, Madras 17-4-1797 O.I.O.C.

⁴⁰ Hilton Brown, *Parry's of Madras*, (Madras, 1954). p. 38.

persuade them to try West Indian methods.⁴¹ His failure to meet contractual obligations to the Company raised some concern in Madras, in that he failed to deliver any sugar. The Board of Trade in Madras did not penalise him; he was reported to have encountered "the violence of the elements."⁴² In 1806, he was released from contract. By this juncture, however, it had become apparent sugar production for the British market in the Madras Presidency was uneconomical. On release from his contractual arrangements he turned to indigo planting,⁴³ but died suddenly in 1808, leaving Thomas Parry, who had given him considerable financial backing, with little option but to purchase Campbell's sugar and indigo works in the hope of cutting his losses.⁴⁴ Thomas Parry's involvement with Campbell proved to be a harbinger of the future. In the early 1840s, the Agency House bearing his name became the largest sugar producer in the Presidency.⁴⁵

The sugar growing areas of Barramapore, particularly those at Ganjam and Rajamundry, a thousand kilometres northeast of Madras city (see map page 131), were brought to the notice of the Company by the eminent botanist Dr Roxburgh, who visited the region in 1792. He reported that many crops, including sugar cane, indigo and leguminous food plants, grew there in abundance. The region offered the advantage of sea transport and permanent water for irrigation.⁴⁶ His report was particularly positive about Ganjam, where he believed the sugar yield

⁴¹ The term *ryot* is used in this thesis as a generic term to describe peasant cultivators. A more exact description of their caste divisions and modes of land tenure can be found in: Sunil Kumar Sen, *Agrarian Relations in India (1793-1947)*, (New Delhi, 1979), Chapter 2 *passim*.

⁴²

⁴³ *Ibid*,

⁴⁴ Hilton-Brown, *Parry's*, (1954), p. 40.

⁴⁵ *Select Committee Sugar and Coffee Planting in Her Majesties East and West Indian Possession and the Mauritius, 1847-48*, Third Report, p. 27, Evidence of John Utlay Ellis, partner in the Parry's Agency House Madras City.

⁴⁶ *E. I. S*, App. 3 pp. 1-8, Dr. W Rexburg's account of the Hindoo Method of Cultivating Sugar Cane and Manufacturing Sugar and Jaggery, in the Rajahmundry Circar: Interspersed with Such Remarks as Tend to Point out the Great Benefit that Might be Expected from Increasing this Branch of Agriculture and Improving the Quality of the Sugar. See also, The Process Observed of the Natives of the Ganjam District of Making the Sugars of Barramapore.

to be higher and the problems associated with cane growing less than in Jamaica. An attractive feature in this region, compared with much of Bengal, was that cane harvesting and sugar making coincided with a period during which work on other crops was light.⁴⁷

It was at Ganjam that the most sustained effort and greatest single investment in capital and West Indian technology took place during this first phase of European involvement. Here a Mr. Colley⁴⁸ was awarded a contract in 1800 to produce sugar from canes grown by native cultivators. The Company would advance to him annually the capital for cash crop advances to the cultivators in districts adjacent to his works at Munsoocotah.⁴⁹ He used the best techniques available in an effort to produce high quality sugar for export, having become aware of the British refiners' comments on the damp nature of much East India sugar and loss through deterioration in ships' holds.⁵⁰ In an effort to overcome these problems through the production of dry and good quality sugar, he erected stone buildings in which to mill cane and crystallise sugar, and to cure and store sugar prior to export.⁵¹⁵² The sugar-making season in Madras coincided with the monsoon; therefore, dry facilities were vital. High quality stone buildings were expensive and Colley, in common with many other Europeans, encountered high establishment costs. Consequently, he had great difficulty in supplying sugar at the prices agreed in his contract. The Company, as has been shown above, did not offer more than short-term support to the sugar industry in Madras. Colley,

⁴⁷ *Ibid*, App. 2 p. 45 Fort St George Commercial Consultations 2-5-1793, Letter from Madras Government to the Honourable Court East India House London 2-5-1793.

⁴⁸ P. P. 1812-13 (150), (151) VIII.393, *List of Persons Who Have Proceeded to India Under License from the East India Company as Free Merchants in each year, 1793-1812*. Colley does not appear on this list; therefore, it is possible that he had been in India for a considerable time.

⁴⁹ *E.I.S. App.* 2 p. 47, Letter from Madras Commercial 14-4-1800.

⁵⁰ *Ibid*, pp. 116-118, Board of Trade Consultations 14-3-1793, Report of the Sugar Refiners.

⁵¹ *Ibid*, pp. 259-263, Fort St. George Commercial Consultations 7-2-1801 Letter from Colley to the President and Members of the Board of Trade.

⁵² *Ibid*. p. 262. In 1801, Colley claims the capital value on his works is Sicca Rs, 44,000.

however, appears to have been an exception; they continued to make working capital from locally collected land revenue available for cash crop advances to cultivators, long after their legal obligation ceased.⁵³ Colley had the infrastructure and knew what type of sugar was required for the British market. He also understood that sugar must be dry before beginning the voyage to prevent deliquescence (becoming liquid by absorbing moisture from the air in the holds) or serious weight loss, both frequent occurrence with European manufactured muscovadoes or raw indigenous sugars.⁵⁴ Nevertheless, Colley's best efforts did not meet with long-term success and his endeavours disappear from East India records after 1810.

The Company's hopes for Ganjam sugar went beyond that of export to Europe. They also wished to promote the manufacture of sugar candy in the district as an import replacement for the candy of Canton and Batavia. Unfortunately, the local candy proved to be only marginally cheaper and not of as high quality as the imported variety.⁵⁵

Support for Europeans in Madras continued for some time after the policy shift away from European involvement in Bengal. The rationale may have been the abundant river water for irrigation, the tropical maritime climate, seen as ideal for sugar, and the proximity of all sugar works to the sea, Salem being the exception. By 1810, however, little of the European sugar industry remained. The efforts of Company and private individuals failed to produce sugar at a price that would enable its export to Britain; consequently, from 1792 to 1808 the

⁵³ *Ibid*, App. 1 pp 259-60, Letter to Fort St George Board of Trade January 25th 1800. Colley was apparently well known to a Mr. J. Ogilvie, an influential Company official.

⁵⁴ *Ibid*, App. 1 pp. 114-116.

⁵⁵ *Ibid*, App. 1 p. 266 Extract from Fort St. George Revenue Consultations 5-6-1815.

Company was able to source only 3,984 tons of exportable sugar from Madras Province⁵⁶

Indigenous and Exotic Canes and West Indian Cane Agriculture 1792-1800.

The early sugar industry based on West Indian technology and experience in the sub-continent did not confine itself to making sugar from indigenous raw sugar. As we have seen, some attempts to create sugar cane plantations were tried; at such places, a few attempts to improve the quality of canes and introduce West India cane agriculture were tried. These, however, were not pursued and developed into a viable plantation industry, due in part to the narrow self-interests of Company policy.

As we have seen, information about indigenous canes and which varieties suited a particular area in Madras was sparse during the early stages of European involvement. This, however, was not the case in Bengal, where from the outset a botanical study was available, due to the expertise of the botanist, Dr Roxburgh. The sugar cane varieties native to Bengal were, and are still, botanically complex. Roxburgh, in the light of available knowledge of the 1790s, produced a reasonably comprehensive study; at this early stage, however, he was unable to fully catalogue the considerable diversity of canes.⁵⁷

⁵⁶*Ibid*, App. IV, p, 74. Table Showing Quality and Value of Sugar Exported to London on the Account of the East India Company.

⁵⁷*Ibid*, App. 1 pp. 97-98, Bengal Board of Trade Consultations 4-9-1792. Dr Roxburgh's catalogue of sugarcane growing in the Bengal Presidency in 1792, lists the main variety. They were Cadjoolee, a low yielding, hard cane; Santipore, similar to West Indian canes but of lower sugar yield, Pooree, commonly grown around Calcutta, also described as similar to West Indian cane with a lower yield, Cullerah, grown in swampy regions, which yielded a weak insipid juice; and Punsari a cane common to the drier Banaras region. The canes of the sub-continent were difficult to identify botanically, since differences between them were minute. It was not until 1918 that the five different families of canes growing in Northeast India (Mungo, Nargori, Saretha, Pansahi and Sunnabile) were identified. Of these, the Pansahi group is not exclusive to India; it actually belongs to the group *Saccharum Sinensis*. G. Stevenson, *The Genetics and Breeding of Sugar cane* (London, 1965) pages 25-26, tells us: the other four groups were classified in the early 1900s as *Saccharum Barberi*. Of the five, only the Saretha, which grows in the Punjab and northern Bihar, is not native to Bengal. The Nargori cane found in waterlogged or swampy land was certainly the Cullerah identified in 1792.

Some of the most commonly grown of these canes presented problems to the West Indian crushing and sugar making technology; amongst these was the hard outer rind of some canes, which made crushing difficult. This hardness, as we have seen in Madras, tended to cause breakages of gudgeon pins and gears of imported West Indian cane mills. Another problem was discolouration of the raw sugar made from Cadjoollee canes, a hard but common variety in Bengal. The red colour was contained in the outer rind of the cane and, when crushed with the kolhu mortar and pestle mill (this mill, common to many sugar growing districts ground the cane into a pulp, see Appendix 3, illustration 6), the colouring matter became infused in the raw *gur* and was impossible to remove during refinement. The low sugar yields of some indigenous canes and difficulties associated with traditional Indian cane cultivation were a problem.

As consequence of these difficulties, some European planters urged the Company to assist with the introduction of exotic canes. Planters, particularly those with West Indian experience, were familiar with the thicker and higher yielding canes recently introduced to the West Indies, such as red or white Otahieti, and some had knowledge of the canes of Java or the Malay Straits.⁵⁸ The Company responded to this by introducing a new variety in 1795-6, which originated in southern China and was experimentally cultivated in the Calcutta botanical gardens under the supervision of Dr. Roxburgh. By 1799, he reported the distribution and growth of this new variety amongst the cultivators as: "the utmost possible success."⁵⁹ In common with the hard native canes of India, it showed good resistance to white ants and jackals. Field trials at the Company's sugar farm at Mizapore Cutna, under the supervision of Mr. Cardin, also proved

⁵⁸ Bengal Sugar (1794), p. 66.

⁵⁹ E.I. S, App. 1 pp. 258-9, Bengal Public Consultations 5-12-1799.

highly successful.⁶⁰ The canes were exotic only from the point of view that the actual setts were imported into the sub-continent. They were, however, not entirely exotic, they actually belonged to the group *Saccharum Sinensis*, the same group as the local cane, Pansahi. Their source was a clone widespread in Indo-China, South China and Taiwan that possessed characteristics identical to Pansahi.⁶¹

The sum total of agricultural experimentations during the period 1792-1810 was the introduction of this cane and some experiments in the District of Radnagore with ratoons in 1792-3 (growing canes from the root stock of the previous crop), which proved unsuccessful due to termites eating the roots during the dry season.⁶² Attempts were also made at cane holing (a West Indian mode of cane planting which involved digging holes about 30 centimetres deep at intervals, putting manure in the hole and planting the cane setts over this layer of manure).⁶³ Although no record of the success or failure of this could be found, it was used later at Behea during the 1880s, where the method proved successful.⁶⁴ The abandonment of direct involvement by the Company in the development of sugar cane agriculture was another victim of the policy changes that will be discussed below.

Toward a New Policy

Given the failure of would be European entrepreneurs to successfully establish themselves in the sub-continent, the Company by 1794 began to look to indigenous suppliers for a type of sugar that could be profitably transported to,

⁶⁰ *Ibid*, p.259 30-9-1801.

⁶¹ G. Stevenson, (1965), pp. 25-26.

⁶² Ratoons are canes grown from the stumps left in the ground from the previous seasons and allowed to shoot and develop into crop the following season.

⁶³ *E.I.S App.* 1 pp.111-112, Bengal Board of Trade Consultations 4-9-1792.

⁶⁴ Anonymous, *First Annual Report of the Agricultural Department of Bengal*, (Calcutta, 1886) p.

and sold in, Britain. It became clear that indigenous sugars, particularly fine *khandisari* sugar, were beginning to find a place in the British home market. The Board of Trade in Calcutta was also beginning to have real doubts that intrusion of European and their industrialised West Indian sugar factories into the interiors of Bengal was particularly wise.

The Company ordered its Collectors and Political Agents to conduct a survey throughout the sugar producing districts of Bengal. This survey would have geographical, botanical and agricultural dimensions (these aspects will be discussed in Chapter 7 below). The report would also revealed disquiet in the localities among the traditional leaders in the localities with regard to Company sugar purchasing policy and the activities of European merchants. Perhaps more disturbing for the Company's hopes to export *khand* was the dearth of fine sugar in Bengal.

Table V111 Extract from the Survey of 1792 of the Area under Cane Cultivation and the Production of Fine Sugar and Gur in the Main Sugar Producing Districts of Bengal

Amounts in Tons.		Produce of District.		Local Consumption.	
District	Eng. Acres	Sugar	Gur	Sugar	Gur
Sarun	5,064	206	859	7	45
Dinagepore	6,045	550	N/A	138	N/A
Burdwan	8,264	1,638	6,699	N/A	N/A
Midnapore	1,134	1023		460	N/A
Beerbhoom	4,847	671		168	N/A
Jessore*	Palms	549		N/A	N/A
Total	25,354	4,637	7,558	773	45 ⁶⁵

* Jessore mainly date tree sugar.

Before the results of this survey were available, the Board of Trade in Calcutta had expressed doubts on the value of West Indian sugar producing methods in the sub-continent:

The projects of several Europeans in different pursuits, have from the outset laboured under a great disadvantage, of much money being

⁶⁵ *E.I.S* App. 1, pp. 180-2, Bengal Public Consultations, Abstract Statement of Sugar and Gur production in Bengal 1792.

sunk in buildings and expensive establishments; and that this has been the principal cause of the failure of most.⁶⁶

The establishments at Sukhsagar, Umnepur and Apail all fitted neatly into the above category, but the failure of these ventures was only part of the motivation for this change. The Company had also come to the opinion, by 1792-3, that the product of the European establishments, usually a muscovado similar to the West Indian import to Britain, could not be shipped from India and sold at a profit in London. If the trade was to show profits, these would come from the export of indigenous cured white to pale yellow *khandisari* sugar, which, unlike the European manufactured product, suffered only minor weight loss and did not deliquesce during the voyage.⁶⁷ This realisation apparently coincided with a better understanding of the indigenous methods of both cane cultivation and refining. The "primitive methods" mentioned scornfully by the Calcutta Society were now seen in a different light.

The whole of the operations of cultivation and refinery show ingenuity as well as skill, that the implements used are cheap and simple; that the various canes, the skill in culture, the modes of preparation of sugar, the general knowledge thereof, and the obtaining of sugar from the date tree, indicate that the manufacture was known here long before the nations of Europe or America ever heard of sugar.⁶⁸

The rationale that brought the Company to this conclusion was, however, based on information recently gained about cane cultivation, the extent of production and

⁶⁶ *E.I.S.*, App. 1 p. 101.

⁶⁷ *Ibid*, pp. 114-116. In 1792, the Company obtained information on sugar deterioration in transit from merchants dealing in the gulfs of Suez and Persia. They informed the Company that weight loss was around 3 percent for dry sugar but higher if the sugar was damp. *Ibid*, p. 71: Lambert, an experienced East India merchant, suggested weight loss would remain significant unless the sugar was well-cured, i.e. dry *khand*.

⁶⁸ *Ibid*, p. 97, Minute of the Board of Trade 4-9-1792.

the nature of the internal market. This information gave them an accurate understanding of the cost of purchasing of sugar in the *mofussil* (interior), transportation to Calcutta, processing through warehouses and the cost free on board (FOB) in Calcutta (see Appendix 1, Table 30).⁶⁹

A combination of the continued failure of Europeans to thrive as sugar makers plus knowledge painstakingly put together in the survey of Recorders and Agents in the *mofussil*, inexorably pushed the directors toward a policy of purchasing *khand* directly from indigenous merchants. The final act in this process of establishing policy with regard to European involvement in Bengal may well have been the failure of Paterson. The extent of Paterson's negotiations recorded in East India Company records are indicative of the belief and trust some East Indians placed in his abilities. The high opinion of his ability is reflected in the records thus: "[He was] a person well skilled in the cultivation and manufacture of Sugar, according to the most approved methods in use in the West Indies."⁷⁰ The strongest indication that Paterson was the catalyst for sugar policy change may be drawn from the following statement: "When Mr. Paterson shall have delivered a quantity of sugar upon the terms of his contract, the Board may draw some inference of the advantages he may derive from his West Indian skill."⁷¹ If indeed they did have so much confidence in his ability, it was to prove unfounded; he was slow to establish a plantation, unable to find sufficient financial backing and did not deliver one crystal of the sugar to the Company. His failure must have lent strength to those doubting the economic wisdom of European sugar ventures.

⁶⁹ F.O.B, 'Free on board' is the price of sugar when loaded aboard ship, including the prime cost, transport costs to Calcutta, warehouse costs and the cost of loading.

⁷⁰ *E.I.S. App.1* p.101, Bengal Board of Trade Consultation 4-9-1792.

⁷¹ *Ibid.*

By 1792, the Company had in its possession a great deal of information on all aspects of the East India sugar trade, not only from its agents and administrators throughout the sugar producing regions of Bengal,⁷² but also from London sugar refiners,⁷³ and information on indigenous methods of making sugar (see appendix 3).⁷⁴ This information strengthened the perception of the economic benefits of sugar manufacture with low infrastructure costs, similar to those used by the indigenous sugar makers. These indigenous methods achieved low cost outlays and produced a grade of sugar that sold at a better price than the muscovado produced by the European factories in India.

The report of a London refiner, Benjamin Travers, on the quality of sugars purchased at Rungpore, Banaras and Soonamooky, also added strength to the argument for the purchase of indigenous *khand*. The report had positive aspects but pointed to problems of refining some types of East India sugar.

This sugar, which has a very bold grain, indicating strength, cleared very strong, insomuch as I was able to use three or four large basins of fresh water with a view to heighten its colour and reduce its grain.⁷⁵

Travers saw the Soonamooky sugar offering the best value; it formed into large crystals more readily than other sugars and produced high quality sugar loaves. The Banaras and Rungpore sugars were not of the same quality, but they too were suitable for refining. In this report the native method of refining sugar came in for some criticism; "exposure to fierce heat during the initial refining process caused damage." This could not be rectified, preventing the sugars refined in

⁷² *E. I. S. App.* 1 pp.72-93 and 135-154 passim,

⁷³ *Ibid*, pp. 207-8, Report of London Sugar Refiners London 21-9-1792.

⁷⁴ *Ibid*, pp. 210-216, The Memorial of William Fitzmaurice to the Honourable Court of Directors, 6 February 1793. See also *Ibid*, *App.* 3 pp. 43-79 passim: *An Account of the Method and Experience of Cultivating the Sugar Cane in Bengal; in a Letter from a Bengal Planter 1794.*

⁷⁵ *Ibid*, *App.* 1 p. 207, Report of the London Sugar Refiners.

London from achieving their full potential.⁷⁶ These sugars seem to be of large crystal; they were either *shakker* or sugar candy, but not fine *khand*. Export of this sugar to London is indicative of the fact that in 1792 the Company was sending sugar similar to the strong-grained muscovado of the Caribbean sugar colonies. Although some of the sugar refined in London was indigenous, it is also possible that some was made in Company refineries; at least two were in operation 1792 to 1794.⁷⁷ If indeed the sugar was both indigenous coarse sugar and sugar made under European supervision, and both presented problems to the refiner, this information strengthened the case for exporting *khand*. This sugar presented no such difficulties; it was a dry, clean, could be sold directly to the grocery trade and it required no value adding in Britain.⁷⁸

Sugar Policy in the Emerging Colonial State

The 1791 report of the Committee of Warehouses pointed to advantages for the Company's public image, commerce, its Indian subjects and the financial administration of the province, if sugar cultivation and manufacture was encouraged. For example, it would increase the disposable income of the *ryot*, increase land revenues on which the economics of the Company government depended and provide sugar for British consumers at a time of shortage.⁷⁹ In the sub-continent, the Company would be perceived as a protector and champion of its Bengali subjects through the enhancing of the economic prospects of

⁷⁶ *Ibid.*

⁷⁷ *Ibid.*, p. 139 and p. 158, The Company owned and operated at least two sugar works in 1792, one at Commercolly and another at Patna.

⁷⁸ Thomas Tooke, *A History of Prices*, (London, 1838), p. 235. Best quality East India white cost £4.80-£5.75 per cwt. in London 1798. By late 1799 the price of all sugar had dropped considerably until by early 1800 fine *khand* cost between £2.50-£3.50 per cwt.

⁷⁹ *E.I.S App.* 1 p. 16, Report of the Committee of Warehouses 29-2-1792. Lands where sugar and mulberry were cultivated paid from 2 to 5 times more rent than land producing grain crops.

agriculturalist, and in Britain it would be perceived as coming to the aid of consumers at a time when West Indian sugar was very expensive.

The realities on the ground in India, however, were different. Implementation of policy there was subject to difficulties foreign to many of the directors at India House. In India, it was necessary to reconcile the problems of British government with traditions of the various groups and religions of Bengal. It was vital to balance the requirements of commerce with the British administration's requirement to govern the distant localities without disturbing traditional mores. The question to be answered was, "would the intrusion of a European sugar industry, or European sugar merchants seeking to make arrangements to purchase sugar, upset the traditional equilibrium?" The cooperation of the traditional elites was vital to ensure quiet government, since any threat to their status or prestige might bring disquiet. With this in mind, implementation of a policy of acquisition of sugar for export, without undue interference with the interests of *zamindars* (for Indian names or terms, see glossary page V111) and other influential community leaders, was vital. Such leaders were not only holders of traditional title, they were frequently intimately involved in the sugar trade as cultivators of cane on their own holdings, on a larger scale than the peasant cultivators.⁸⁰ In many instances they were also the owners of indigenous refineries (chapter 7 below), were involved in marketing sugar, and provided cash crop advances at high interest to peasant cultivators. It was their interests and influence that might be eroded should the Company

⁸⁰ The term *zamindar* (*zemindar*) is also used as a generic term to describe those holding land title under the Bengal Permanent Settlement. For an understanding of the power and influence of these landholders and their influence on agrarian society in Bengal: Asok Mitra, "Fifteen Decades of Agrarian Change in Bengal, pp. 389-425 in *Essays in Honour of Professor S. C. Sarkar* (New Delhi, 1976) passim, with particular reference to pp. 397-403.

interfere with traditional ties, by offering cash crop advances at low interest rates direct to the peasant cultivators.

The concept of direct government subsidies, rural banks or the organisation of cooperatives of cane cultivators to stimulate sugar cane production had not formed in the minds of policy makers in the 1790s and would not evolve until long after this period. However, a suggestion was put forward in the early 1790s that sugar exports to Europe could be increased if the Company offered direct financial support to cane growers through cash crop advances at low rates of interest. A limit of 100,000 acres was recommended. Under this scheme, many of the traditional mores of cultivators would continue. Gradual changes would be implemented but only where this could be achieved without causing communal problems. The cultivators would grow and crush the cane and European refiners would process the juice, or *gur*, into muscovado in simple low cost refineries.⁸¹

Initially the Company's approach to sugar cultivation and production was to use local revenues to provide working capital to peasant cultivators through its Commercial Agents. The Company preference, however, was to purchase at local markets or through middlemen, but price increases brought about by European merchants seeking sugar to supply the growing export market persuaded them to vertically integrate, ensuring sugar supply at source, through paying cash crop advances directly to the cultivators.⁸² The Board of Trade in Calcutta, however, was not totally wedded to this method. They hoped market forces would stimulate the peasant cultivators to plant increasing acreage of cane

⁸¹ *Bengal Sugar*, (London, 1794), pp. 52-66 passim.

⁸² *E.I.S. App.* 1 pp. 61-2, 66-7, 68, 70 and passim.

and thus stimulate supply.⁸³ They obviously saw the high demand for sugar between 1792 and 1794 as a temporary phenomenon.

Initially the Company was constantly reviewing its options with regard to sugar, expressing the view that it did not wish to pursue a policy of coercion or attempt to create a monopoly, as they had in the opium and textile trades. The advantage of Commercial Agents resident in the sugar districts with access to finance from land revenue was deemed sufficient to compete successfully with private merchants.⁸⁴ This policy was to be of short duration.

Reports in 1792 from Collectors in the sugar districts of Bengal, Bihar and Orissa varied on methods of financing sugar purchases. Some advocated direct payment of cash crop advances; others believed this method would present difficulties with accountability and problems of default in the event of those in receipt of working capital absconding because of crop failure or an accumulation of debt. Agents from the districts still feeling the effects of the famine of 1770, where population was still sparse,⁸⁵ recommended that any cash crop should be channelled through sugar makers or middlemen, individuals from whom the Company would be more likely to recover debts.⁸⁶ In mid 1792, the Board of Trade in Calcutta was still inclined towards direct encouragement of small cultivators and expressed concern that the involvement of middlemen would continue the problem of debt bondage. The traditional practice of small-scale cane cultivators was to borrow from *mahajins* (money lenders) to finance

⁸³ *Ibid*, pp. 120-121 and 129-130, Bengal Commercial Consultations 25-9-1792, Deliberations of the B.O.T. in respect of the Increase of Sugar and Letters to Resident at Soonamooky Santipore 22-10-1792.

⁸⁴ *Ibid*, p117, Bengal Commercial Consultations 24-8-1792, Letter to Resident at Banaras.

⁸⁵ An account of the famine of 1770 is available in W. W. Hunter, *The Annals of Rural Bengal*, (London, 1868) pp. 19-45 passim and Appendix B pp. 399-421; see also B. B. Chaudhuri, "Agricultural Growth in Bengal and Bihar, 1770-1860: Growth of Cultivation Since the Famine of 1770, *Bengal Past and Present*, XCV Part 1. 180. (January-June, 1976), 290-340, pp. 294-296 passim.

⁸⁶ *E.I.S. App. 1*, pp. 73-97 passim.

cultivation and pay the land rent, the latter invariably falling due before the crop could be harvested. The balance of the account with the lender of the cash crop advances was settled when the season was over, the lender having secured the *gur* to cover the cash advance. At such reckonings, the *ryot* invariably found his debt burden had increased.

In September 1792, the Board of Trade in Calcutta, after considering all these options, had formed an opinion that payment of cash advances directly to cultivators was the best way of increasing cane cultivation.⁸⁷ The Governor General in Council, in pursuit this of policy, instructed Commercial agents to point out the benefits to Zamindars of rent enhancements from land cultivated in sugar cane, while at the same time requesting them not to exploit the buoyant market by significantly increasing rents. They were also informed that the government was aware they were discouraging the *ryots* from accepting cash crop advances from, or selling their sugar to, the Company.⁸⁸

The Board of Trade and the Executive Council were, from September to early November, at one. The opinions of District residents, however, continued to be both supportive and opposed to cash crop advances. Some wrote of tensions between landholders and *ryots*, due to cash crop advances paid by the Company or private merchants.⁸⁹ The Resident at Santipore reported problems with the payment of cash crop advances; the *ryots* were apparently defrauding him. Having paid them an amount of advances based on an agreed acreage, he had discovered they had planted less than contracted. This left him with no alternative

⁸⁷ *Ibid*, pp. 119-123.

⁸⁸ *Ibid*, p. 124 17-9-1792. Letter from Governor General in Council to Bengal Board of Revenue.

⁸⁹ *Ibid*, p. 125, 11-10-1792 Letter from Resident at Soonamooky to B.O.T. Calcutta, *ibid*. p. 143. Bengal Commercial Consultations 10-2-1793. The Resident at Gollagore informed the Board of considerable local resistance from community leaders to the Company's offers of advances direct to cultivators.

but to employ people to oversee and measure the plantings.⁹⁰ Other Residents also encountered similar problems inherent in vertical integration: fraud, failure to repay or failure to deliver the amount of *gur* agreed at planting time.

On November 5th 1792, the Governor General in Council sent specific instructions relating to sugar purchases to all relevant Company servants. The directive noted the concerns of the Board of Trade in Calcutta regarding the cultivator's inability to finance sugar crops and indebtedness inherent in allowing the traditional system to continue. Their decision, however, was that the policy best suited to the needs of the Company government was to purchase all sugar from sugar boilers and middlemen, who in turn would provide crop advances to cultivators. Their primary concerns were the risk of bad debts through absconding ryots and the fear of entering into multiple agreements which, when conducted in the traditional business ways of the sub-continent, would lead to complexities and problems. In future, the Company would restrict its role to one of a buyer and exporter of sugar, either refined or raw, and would cease to engage in sugar refinement.⁹¹ The greatest concern expressed by the Executive Council was that of corruption. Here it saw the possibility of Company servants, armed with its authority, buying sugar on their own account and profiting by using the trading resources of the Company.⁹²

The fears expressed by the Governor General in council are typical of Cornwallis, an administrator painfully aware of the excesses of the past, who sought to avoid a situation so rife in the earlier eighteenth century administrations where Company servants, either Indian or European, would be tempted into, or

⁹⁰*Ibid*, pp. 129-30, Letter from Resident at Santipore 22-10-1792.

⁹¹*Ibid*, p. 134, 2-11-1792, Letter Governor General in Council to B.O.T. Calcutta.

⁹²*Ibid*, p.123. Bengal Commercial Consultations 2-11-1792, Letter from Governor General in Council to B.O.T.

wilfully pursue, corrupt practices for personal enrichment.⁹³ Of even greater concern to the Governor General was the way in which its Indian subjects perceived British rule. The 1790s were a decade during which the transition from Company to early colonial state occurred, and when political stability and the legitimisation of the regime began to take precedence over purely mercenary aims.⁹⁴ The Council's decision was in response, to some degree at least, to disquiet expressed by local community leaders, *zamindars*, *taluqdars* and larger farmers at the direct involvement of the Company in vertical integration at local level.⁹⁵ The government sought at this time to cultivate local relations to facilitate governance in the localities, as is commented on in the writings of many historians. Peter Robb, for example, points to the close relationships and the interdependent links between the landholding elites and the *ryots*.⁹⁶ R.E. Frykenberg explains how, through a policy of indirect contact, the colonial power sought to maintain the prestige and power of some traditional local elites, while at once attempting to curtail European activity in the localities, activities that could easily upset delicate community relations.⁹⁷ The title holding elites were intended to become the class of improving landlords similar to the British gentry, envisaged

⁹³ Philip Lawson, (1993), p. 129. Cornwallis sought to bring a professional ethos to the government servants within Bengal. By offering good salaries and appointments based on merit, he hoped to bring professionalism to public service administration that, by long custom, had used its position to increase personal wealth.

⁹⁴ Neeladri Bhattacharva, "Colonial State and Agrarian Society," in Burton Stein (ed.), *The Making of Agrarian Policy in British India 1770-1900*, (Delhi, 1992), p.121.

⁹⁵ Rajat and Ratna Ray, "Zamindars and Jotedars: A Study of Rural Politics in Bengal," *Modern Asian Studies*, 15, 3, (1981) pp. 649-721. This article is a study of the importance that the British placed on property rights in India and their desire to establish an "improving" landlord class.

⁹⁶ Peter Robb, "Peasant's Choices? Indian Agriculture and the Limits of Commercialisation in Nineteenth Century Bihar," *Economic History Review*, XLV (1992), pp. 97-119, Passim. Robb discusses the close cultural relationships between zamindars, wealthy high caste farmers and moneylenders, explaining their inter-relationships and obligations to each other. In the face of this existing social structure, the British found it impracticable to implement new systems to purchase commodities. Instead, they fell back on the old method of cash crop advances from traditional lenders, which left the growers open to coercion and exploitation.

⁹⁷ R. E. Frykenberg, "Traditional Process of Power in South India: A Historical Analysis of Local Influence, and Village Strength in South India," in R. E. Frykenberg (ed.), *Land Control and Social Structure in Indian History*, (New Delhi, 1979), pp. 266-7.

in the Bengal Permanent Settlement, which for the first time gave property rights rather than traditional rights.⁹⁸⁹⁹ At the same time, the administration created an independent judiciary to give the new class of landlords the protection of law.¹⁰⁰ The influence and traditional authority lay with these elites; the government was not prepared to risk alienating them for the doubtful benefit of paying direct cash crop advances to facilitate the purchase of sugar.

There were also commercial factors relevant to the shaping of sugar purchasing policy, in particular the thriving export sugar trade via American and Danish vessels. This increased demand and tended to drive up sugar prices, often forcing the Company to increase the price it paid to suppliers. Had the scheme that gave advances at low interest rates been implemented (above), it would almost certainly have seen much of the sugar grown with the proceeds of land revenue find its way into the private trade.¹⁰¹ The aim of the policy was two-fold: to placate the elites and to ensure the sugar price at source was minimised by keeping a measure of control over supply, more easily achieved by dealing through middlemen who could be controlled by contract.

⁹⁸ D. A. Washbrook, "Law and Agrarian Society in India: The Case of Bihar and the Nineteenth Century Tenancy Debate," *Modern Asian Studies*, 22,2 (1988), pp. 319-354. Washbrook discusses the use by the British administration of the Permanent Settlement as a means of containing their Indian subjects in a *Defined Space*, within defined categories and roles. British administrators, he argues, saw the primary role of India as one of producing agricultural products.

⁹⁹ Dietmar Rothermund, "The Land Revenue Problem in British India," *Bengal Past and Present*, (July-December 1969), pp. 210-233, passim. The Permanent Settlement and the relationship between the Bengal land revenue systems and others in India are explained, as is the journey the Settlement represented from regulation to codification. An explanation of the difference between Cornwallis's system and the Mogul system is offered. With particular reference to where the earlier model made allowance for poor harvests; the British system did not.

¹⁰⁰ D. A. Washbrook, (1981) p. 75.

¹⁰¹ *E.I.S App.* 1 pp. 119-123 passim, Bengal Commercial Consultations 25-9-1792. In this submission to the Governor General in Council, the B. O. T. expressed the fear that cultivators might not repay the advances because of drought or other crop loss, thus incurring a large debt to the company. The possibility is also raised that low interest advances would allow them to grow sugar in excess of the amount advanced by the Company. They could sell this sugar to the private trade, thus using government revenue to subsidise the private trade.

This policy, however, was difficult to implement until demand for sugar fell in 1801. Competition from the private and native merchants ensured some direct payment of crop advances would continue. The neutral status of Serampore tended to complicate matters since it offered an outlet for sugar outside the control of the Company government. Sugar grown with the help of Company advances could still be purchased by European speculators and Indian sugar merchants, and exported via Serampore.

Company Sugar Purchases, 1800-1833.

From 1792 to 1800, demand for sugar in Britain had been strong but in late 1800 early 1801, sugar prices in London, particularly for *shakkar or khaur*, fell considerably. This, together with high freight costs, led to a fall off in sugar purchases by private merchants,¹⁰² a situation made worse by a glut of colonial produce in London brought about by the French embargo of British trade (Chapters 1 and 2, above). Consequently, there was a build up of East India produce in the London warehouses. Merchant capital was tied up in stock, short-term market prospects were poor, and the Calcutta-London trade was in recession.¹⁰³ For the first time the Company government could now fully implement its sugar purchasing policy and buy all sugar from *kharkhanedars* or through middlemen. The regional market in Banaras and Ghazipur was where they began to concentrate their efforts; its major outlet was Calcutta and low export demand there ensured lower sugar prices.¹⁰⁴ Another promising opportunity appeared at this time in the shape of a new agency recently opened

¹⁰²*Ibid* App. 4, p. 39, Report of the Private Trade between Europe, America and Bengal 1-6-1795 to 1-5-1800. High freight costs saw sugar originally destined for Britain or exported directly to Europe or via the American east coast, resold in Calcutta and redirected to sub-continental or Asiatic markets.

¹⁰³*Ibid*, App. 2, p. 38, Bengal Secret Department 9-4-1801.

¹⁰⁴ Shahid Amin, *Sugarcane and Sugar in Gorakhpur: An Inquiry into Peasant Production and Capitalist Enterprise in Colonial India*. (Delhi, 1984), pp. 18-19.

at Mau and Azamgarh. The Resident, however, quickly reported disappointment; the Company *aurangs* did not receive sugar in quantity. The same report also pointed out that Gorakhpur was then being resettled,¹⁰⁵ and the new cultivation there held out the promise of sugar suitable for export.¹⁰⁶ The high cost of transport to Britain ensured the Company would continue to search for low price fine sugar.¹⁰⁷ Rohilkund looked promising 1803-1806, but its sugar proved to be "not fine enough."¹⁰⁸

War, monopoly and the cost of shipping kept sugar purchases by private merchants at a low level until after 1813. Consequently, Company agents established a strong position in the Azamgarh district, a region that made much higher quality *khand*. The Company's bargaining position also improved in other sugar growing districts 1803 to 1807, while private merchants' purchases of sugar declined through this period from 29 to 18 percent of exports. Their strongest influence was, however, in Mau and Azamgarh. In these districts the number of *karkhanas* (indigenous refineries) grew from 95 to 524; only 44 of them were independent, the rest had contracts with the Company.¹⁰⁹ Yet the table below indicates, the prime cost of sugar through this period was not significantly lower. The lack of finance available for cash crop advance undoubtedly limited the supply of *khand*, and the cost of the Company structure and the distance from Banares and Azamgarh to Calcutta all added to the price of sugar.

¹⁰⁵ B. B. Chaudhuri, "Agricultural Growth in Bengal and Bihar, 1770-1860", pp. 290-339, *Bengal Past and Present*, part 1 No. 190 January-July (1976) pp. 290-291, depopulation caused by the severe famine of 1770 and raids by Maghs in the Chittagong region earlier in the eighteenth century and Maratha raids in the western areas of Bengal in the 1760s contributed to depopulation. The effect of the famine on cultivation and revenue values in Bengal 1771-72, as measured by the *Amini Commission 1778*, can be seen in R. B. Ramsbotham, *Studies in the Land Revenue History of Bengal, 1769-1787*, (Calcutta 1926), pp. 132-133.

¹⁰⁶ *E.I.S. App. 2*, p.40, Bengal Public Consultations (Ceded Provinces) 20-10-1803.

¹⁰⁷ *Ibid*, Appendices 2 and 3 passim. In every year between 1800 and 1821, the Company urged its agents to seek only the finer grades of sugar for export to Britain.

¹⁰⁸ *Ibid*, *App. 2* p. 39, Bengal Public Consultations (Ceded Provinces) 20-10-1803.

¹⁰⁹ Shahid Amin (1984), p.17.

Table 1X Tons of East India Sugar Imported to GB and Value at Sale Per ton, East India Company and Private Trade, 1798-1813

1798	6,955	£21.96	£ 65.78	3,226.5	66.6
1799	2,334	£17.52	£ 37.11	2,804	46.15
1800	5,553	£21.69	£44.40	5,488.3	54.54
1801	2,790	£21.80	£52.75	955.5	52.26
1802	2,789	£19.61	£36.62	1,385.2	40.54
1803	1,375	£29.29	£41.36	1,088.4	41.84
1804	3,931	£24.93	£52.92	1,273.8	51.38
1805	5,137	£26.75	£57.36	1.45	36.55
1806	3,290	£25.17	£43.94	7.8	37.30
1807	5,275	£25.56	£38.38	399	22.98
1808	2,422	£27.16	£36.28	296.8	29.77
1809	1,581	£31.47	£43.48	5.95	40.5
1810	2,026	£23.37	£46.88	402.9	44.97
1811	91	£22.38	£38.60	602.9	41.52
1812	3,380	£23.06	£46.07	482.3	45.01
1813	2,378	£20.49	£62.49	1,131.6	59.99

Column 1 Tonnage of East India Company sugar. Column 2 Prime Cost. Column 3 Value at sale London. Column 4 Tonnage Private Traders Sugar. Column 5 Value at sale GB.

A problem that regularly occurred was the purchase of low quality sugar by the Company's agents; this sold in London at a considerable loss (Appendix 1, Table 30). Once again, London protested, pointing out only fine *khand*, such as that purchased in Mau, Azamgarh, and some Rungpore sugar actually kept losses to a minimum. These sugars sold at £51 to £61 per ton, while sugar from Rungpore, Bishenpore, Banaras and Santipore, which was not as fine, sold for £27 to £43 per ton.¹¹⁰

The purchase of low quality sugar caused a build up in the Company's Calcutta warehouses: between 1807 and 1810, however, an outlet for this surplus was found. This was a period during which saltpetre had preference over sugar as ballast (Chapter 1 above) and the central depot for saltpetre bound for Britain was Bombay. Consequently, surplus sugar could now be shipped as dead weight from Calcutta to Bombay, to be replaced there with saltpetre for the run home. Here the Bengal sugar could then be profitably disposed of on the regional market of Western India.¹¹¹

¹¹⁰*E.I.S App.2, p. 16*, Letter, Commercial Department London to B O T Calcutta August 19th 1807.

¹¹¹*Ibid*, p. 17, Commercial Letter London to B.O.T. Calcutta, June 29th 1810.

bondage, a curse to cultivators from time immemorial. The cultivators had only a few implements and their labour to offer as collateral, the loss of a crop and failure to repay cash advances led in a few years to debt bondage. The cooperation of the landed elites was seen as of such value to the British administration that the economic prosperity of the ryot was left to the tender mercies of the wealthy farmers, middlemen or *mahajins* (money lenders), all of whom provided cash crop advances at high interest.¹¹⁴

Company Sugar Policy Post Monopoly

Placating the elites in the localities was but one of the factors driving Company policy during this period, as we shall see below. The success or failure of this aspect of policy is, however, beyond the parameters set for this thesis. One outcome of the policy was to ensure a shortage of good quality sugar for export whenever demand increased, as indeed it did post monopoly when peace came in 1815.

With the cessation of the monopoly and the onset of peace, American trade recommenced 1815-16¹¹⁵ and shipments to Europe¹¹⁶ resumed in earnest.¹¹⁷ The increased demand for sugar could not readily be met by the indigenous industry, consequently the value of *chini* rose in Calcutta from £27 in

¹¹⁴ Research from the publications listed below and available in India Office records indicate interest rates on agricultural loans during the nineteenth century were in a range 35 to 75 percent. W. W. Hunter, *A Statistical Account of Bengal Vol. 111 Rajshahi and Bogra*, (London, 1876), p.89, W. W. Hunter, *A Statistical Account of Bengal Vol. V, Districts of Dacca, Bakarganj, Fureedpore, and Maimansinh*, (London, 1875), p. 216. T. Alexander *Statistical, Descriptive and Historical Account of the Northwest Provinces of India*, Vol. VI, (Calcutta, 1882), p. 141. F. H. Fisher, *Statistical and Historical Account of the North-western Provinces of India*, Vol., XIII Part 1, Azamgarh, (Allahabad 1883), p.127. F. H. Fisher and J. P. Hewett, *Descriptive and Historical Report of the Northwest Provinces of India* Vol. XIV, (Allahabad, 1884), Part 11 pp. 101-102.

¹¹⁵ *Report of the Select Committee of the House of Lords into the Affairs of the East India Company (1830)*, p.28. The tonnage of American vessels clearing out from British ports in India increased from a negligible level to 15,145 in 1816-17, 18,003 in 1817-18 and 23,944 in 1818-19.

¹¹⁶ *E.I.S App. IV*, p. 45, Report on the External Trade of Bengal Exclusive of the Trade on the Account of the East India Company. During 1816-17, 716 tons of sugar was shipped to Continental Europe and 4,8092 to USA. During 1817-18, 1,222 tons went to Europe and 5,081 to USA.

¹¹⁷ *Ibid.* p. 43.

1815 to £36.40 a ton by 1820 (Appendix 1, Table 31).¹¹⁸ The enhanced level of competition saw merchants attempting to purchase fine sugar even in those regions which had become the Company's almost sole preserve, Mau and Azamgarh. Khand was in short supply and this poaching of the Company's preserves may have been the catalyst for the government to restrict foreign ships, "to load only for ballast requirements."¹¹⁹ The period 1815 through to 1819 was one during which Company sugar exports were small, as can be seen in the table below.

Table x Tons of East India Sugar Imported to GB and Value at Sale Per ton, East India Company and Private Trade, 1812-1821

Year	Column 1	Column 2	Column 3	Column 4	Column 5
1812	3,380	£23.06	£46.07	482.3	45.01
1813	2,378	£20.49	£62.49	1,131.6	59.99
1814	2,127	£21.67	£79.69	669.7	70.37
1815	166	£25.92	£51.26	6,051.6	61.78
1816	947	£29.46	£43.30	4,538.5	45.41
1817	138	£29.29	£47.66	3,652.5	47.68
1818	954	£32.12	£46.18	4,912.4	44.56
1819	1,037	£29.55	£38.83	5,732.4	34.38
1820	919	£31.13	£36.30	7,717.6	29.52
1821	1,986	£28.64	£28.88	7,082.6	26.31 ¹²⁰

Column 1 Tonnage of East India Company sugar. Column 2 Prime Cost. Column 3 Value at sale London. Column 4 Tonnage Private Traders Sugar. Column 5 Value at sale GB.

From 1821, Company sugar exports began to rise, as did the cost, due in part to competition from private merchants. The benefit of lower freight rates obtained by private merchants, however, was not enjoyed by the Company. Their chartered ships, even in the mid 1820's, still cost £18 to £20 per ton, while private ships of British, American and European origin carried cargo for £6 to £10 per ton.¹²¹ Despite these problems, the Company continued to provide sugar as ballast

¹¹⁸ *Ibid*, pp. 35-6 Tables of the Price of Chini on the Calcutta market 1812-1822.

¹¹⁹ *Ibid*, p. 43.

¹²⁰ *Ibid*, p.73.

¹²¹ *Select Committee House of Lords: Affairs, 1830*, Evidence of Captain Maxfield, pp.406-412 passim

cargoes up to the cessation of monopoly. In the last two years of commercial activity, 1831 and 1832, they exported 5,918 and 5,102 tons of fine sugar.¹²²

Sugar manufacturers of Azamgarh were still receiving Company advances of between Rs.500, 000 and 600,000 in 1831.¹²³ An indication of the influence of the Company's purchasing power is evident from the effect on prices when their purchases ceased.¹²⁴ Local sugar in 1831 was worth 80 rupees (£8.80) per ton but in 1832, it fell to Rs. 47 (£5.17) per ton. A gradual price recovery occurred over the next five years and, by 1837, sugar sold in the local markets for 12 sers (approximately 24 pounds imperial) per, or 92 rupees (£10.12) per ton. The price recovery was due to local merchants securing an alternative market in central India.¹²⁵

Simply put, whenever export demand increased *khandisari* sugar became more expensive. The merchants reacted by purchasing cheaper grades of sugar to ballast their vessels, particularly *khaur*.¹²⁶ This dark brown sugar frequently deliquesced into a glutinous mass in the ships' holds, and served to give East India sugar a bad reputation. In that it strengthened the hand of the West Indians by allowing them to speak of East India sugar in derisory terms, i.e. they could ask: "how could India be perceived as a supplier of the British market when much of its sugar was virtually unfit for use"?¹²⁷ This image, however, did not impede

¹²² J. R. McCulloch, *A Dictionary of Products Theoretical, Historical and of Commerce, Vol. 11* (Philadelphia, 1852). p. 627.

¹²³ Anonymous, *Report of the Collector of Azamgarh on the Settlement of the Ceded Portion of the District Commonly Called Chuklah Azamgarh* (Agra, 1837) Paragraph 8.

¹²⁴ J. R. McCulloch, *A Dictionary of Products Theoretical, Historical and of Commerce, Vol. 2* (Philadelphia, 1852), p. 652. In 1830 the Company imported into Great Britain 5,918 tons, in 1831 5,124 and in 1832, the last year of sugar shipments, 2,500 tons.

¹²⁵ *Ibid.*

¹²⁶ *E. I. S. App. IV*, p. 43. Report of the Sugar Trade 1816-17; *Khaur* was carried as ballast, *khand* and *shukker* were in short supply.

¹²⁷ John Gladstone, a prominent West Indian merchant, resorted to constant derogatory references to the poor quality of East India *khaur* in the letters between himself and James Cropper, a fervent advocate of slave abolition, on the subject of the protection of West Indian

the sales of fine *khandisari* sugar. Its niche market among some sections of British consumers remained secure.

Company Policy and the Sugar Trade 1821-1836.

The combined factors of war, monopoly and Company policy effectively ensured that an Indian capitalist investing in a *karkhana* could not rely on the export market via Calcutta from 1792 to 1823. Demand for the product was spasmodic. Consequently, indigenous producers sought markets within the sub-continent or in the caravan export trade, both of which offered stable demand. The European export market, when it was buoyant, offered the prospect of additional profits, but their productive capacity did not allow them to quickly respond to this additional demand. Cultivators had to be persuaded to alter their cropping patterns and additional capital was raised or diverted from other areas of commerce to pay cash crop advances. Until the enhanced levels of production reached the market, prices remained high: this was good for the merchant's profits, but limited sugar exports to Britain and Europe. Consequently, the sub-continental sugar market was an unstable one, frequently punctuated by high prices. Substantial European investment in vertical integration in tandem with the indigenous capitalists may well have stimulated sufficient demand to overcome the boom and bust nature of the European export sector of this trade.

The Company's sugar purchasing policy was based on self-interest and its fear of social disruption in the sugar growing regions. The abandonment of European enterprises and West Indian technology, and their reluctance to implement a system of state financed vertical integration were at the root of the

sugar with discriminating duty. John Gladstone and James Cropper, *The Correspondence Between John Gladstone esq. MP and James Cropper esq., on the Present State of Slavery in the British West Indies and the United States of America, and the Importation of Sugar from the British Settlements in India*, Second Edition, (Shannon, 1972) Passim.

inability of sugar producers to respond when demand grew. Although it is far from certain that European enterprise would have succeeded in producing sufficient sugar for an export market, policies set in place in 1792 ensured that such an industry would not develop. In the following section, it will be argued that the sugar purchasing and economic and land ownership policies pursued until around 1830 prevented the development of an East India European planter influence in the British body politic. Such a group was needed to counter the strong influence of long established groups such as the West Indian Committee.

The East India Planter Economy: Problems and Limitations.

Although the Company in Leadenhall Street put little actual effort into encouraging the attempts to introduce West Indian sugar technology into the sub-continent 1787 to 1810, they were probably behind the attempts to stimulate the introduction of West Indian technology in 1823-4 and improve the prospects of East Indian sugar in the British market. One publication gave a detailed explanation of East India sugar from 1765 to 1822, another offered encouragement to Europeans to invest in sugar manufacturing in India.¹²⁸ The latter made claims of high profits for sugar manufacturers in India, providing they installed the latest sugar making technology, but avoided expensive stone buildings; obviously, they drew on experience gained from the earlier European attempts.¹²⁹ This document, however, did not discuss a factor of almost equal

¹²⁸For example, Zachary Macaulay, (1823). *East India Sugar: Papers Respecting the Culture and Manufacture of Sugar in British India*, (1822). *Report of the Committee of the East India Association, Appointed to Take Into Consideration the Restrictions of the East India Trade*, (Liverpool, 1822).

¹²⁹*East India Sugar or an Inquiry Respecting the Means of Improving the Quality and Reducing the Cost of Sugar Raised by Free Labour in The East Indies* (London, 1824). The author claimed that he could manufacture and deliver muscovado sugar from his plantation to Calcutta at £13.50 per ton. With additional cost factors such as freight, insurance, mercantile charges and 3.5 percent loss of bulk during voyage, the sugar could be sold at £32.90 in Britain, a profit of £12.36 per ton. Fixed capital in India in machinery and building was £800 and floating or operating capital £3,544.

importance, that of land tenure and the availability of capital to stimulate an industry, which was by nature capital intensive.

A sugar plantation required several hundred acres of land, and planters the capital to develop the land and build infrastructure; usually the planter required loan capital and loans needed collateral. The problem with regard to collateral lay with land tenure and the origin of the problem of land tenure lay in Company regulations made in the last half of the eighteenth century. For example, in 1766, a regulation was made which forbade Company servants from holding land title; the prevention of the corrupt practices of many British was the target of this regulation. In 1793 regulation 38 and in 1795 regulation 48 widened this prohibition. These regulations applied to all British residents¹³⁰ and were part of the process toward Permanent Land Settlement laws in Bengal.

This correlation between secure tenure and investment in the capially intensive sugar industry did not appear for the first time in 1823-4, it had been brought to the attention of the Company in 1792 by the Committee of Warehouses during their enquiries into the viability of sugar planting and manufacture. Aware of the traditional India concept of ownership, they recommended that European sugar planters receive a secure land grant on unoccupied wastelands, an arrangement that would not disturb traditional loyalties. Despite this recommendation, temporary exceptions granted in the last quarter of the eighteenth century apart, Sukhsagar and Apail, grants of this nature were not made available until the 1830s.¹³¹

The Permanent Settlement did not turn out to be a vehicle through which the *Zamindar* class were able to act as Cornwallis intended, and acquire the

¹³⁰House of Commons Select Committee on the Affairs of the East India Company (1831) Evidence of Thomas Bracken, East India Merchant. p. 9.

¹³¹, E. I. S. App. 1, p. 14, Report of the Committee of Warehouses 29-2-1792.

status of English landlords. It was they who were ultimately responsible for the payment of land revenue after 1793, initially this revenue was set too high leaving many *zamindars* unable to meet payments. When this occurred they were forcibly sold-up. The changes of ownership that resulted proved to have a disruptive influence, and the situation did not settle down until inflation reduced the revenue in real terms in the 1820s.¹³² Government regulations and problems associated with the Permanent Settlement were not conducive to capitalist plantation farming.

From 1792 to 1830, only one property in Bengal was held as freehold by Europeans. This property grew sugarcane in the 1790s but by the late 1820s, cultivation was predominantly of rice.¹³³ A combination of insecure land tenure and the poor financial resources of many would-be European sugar planters left them bereft of collateral.¹³⁴ At the heart of this problem, as will be shown below, was the reluctance of the Company government to allow any form of European colonisation¹³⁵ in Bengal until the late 1830s (problems met with by commercial sugar planting on this form of tenure, will be discussed in chapter 6 below).¹³⁶

¹³² Ray Rajat and Ratna, "Zamindars and Jotedars: A Study of Rural Politics in Bengal," pp.81-102 *Modern Asian Studies*, 9, 1, (1975) passim.

¹³³ *Select Committee, Affairs 1831*, p. 15. Evidence of Thomas Bracken, East India Merchant. Warren Hastings awarded the estate at Fort Gloucester in perpetuity to Mr. Lambert, an English merchant exempt from revenue charges. In 1830, it was the property of the Agency House Scott and Co.

¹³⁴ *Ibid*, p. 6.

¹³⁵ Ainslee Embree, *Charles Grant*, (1962), p. 166. Grant and Dundas both opposed British colonisation of India. pp. 168-169 Grant felt that continued monopoly would enable the Indian population to slowly assimilate western values. On the other hand, free trade would lead to colonisation, which would be accompanied by demands from the settlers for the type of freedoms Britons enjoyed at home. Once introduced to the sub-continent these freedoms would also be applied to the Indian population. Grant felt they were not sophisticated enough to handle these freedoms, consequently a breakdown of the established order would occur with attendant problems for the continuation of British rule.

¹³⁶ *Select Committee of the House of Lords Appointed to Consider the Petition of the East India Company for Relief*. (1840), pp. 69-71, Evidence of Andrew Sym, planter Gorakhpur: Sym and a small group of European and Indian entrepreneurs were granted large-scale leases of 50 years duration on land designated wastes in the Gorakhpur region. Sym had outright title or an interest in some 60,000 acres. These land holdings enabled him to obtain substantial mortgages from a Calcutta Agency House to develop 25,000 acres of this land for cropping.

Another barrier to the development of a West India style sugar industry lay with the banking and financial institutions of Bengal, in that they were few in number and possessed only small capital reserves.¹³⁷ Banks or Agency Houses (financial institutions which reinvested British residents' funds within Bengal or remitted them to Britain) may have lent money to sugar planters based on secured property tenure. This, however, was by no means certain, since sugar planting was not an attractive proposition. The West Indies held a virtual monopoly of the British home market, consequently lending institutions tended to view sugar as ballast, rather than as in mainstream commodity. It offered little hope of growth pre-1836.¹³⁸ Indigo, unlike sugar, offered high returns, albeit with high risks. Agency Houses, however, continued to invest heavily in this crop throughout this period.¹³⁹ The Company government was also very heavily involved in the purchase of indigo as a vehicle for fund remittance throughout the 1820s. The scale of the involvement of the Company government and private interests in what was an unstable commodity contributed to the collapse of the Agency Houses in the early 1830s, when stocks in Britain far exceeded

¹³⁷ N. K. Sinha, *The Economic History of Bengal, 1793-1848* Vol., III. (Calcutta, 1970). The banks set up in Bengal during the late eighteenth century failed in the first ten years of operation. The Bank of Hindustan, the banking arm of Alexander and Co, one of the main Agency Houses, did survive for over forty years. This, too, failed when the Agency House collapsed, 1830-34. The primary source of funds for these banks was the savings of public servants with additional funds being deposited by Indian merchants. Other agency houses had banking arms but were unstable institutions with much capital exposed in indigo plantations. pp. 56-60 passim. Amiya Kumar Bagchi, "Transition from Indian to British Indian Systems of Banking, *Modern Asian Studies* 19.3 (1985), pp.501-519. During the first decades of the nineteenth century, there were close ties between the Agency houses and the banking sector proper. The first joint stock bank, the Bank of Bengal, opened in 1809, with Bank of Calcutta, a government sponsored bank, as its parent and a charter from the East India Company. The leading agency houses were among the major shareholders and directors of these houses were directors of the bank. p. 507.

¹³⁸ Amales Tripathi, *Trade and Finance*, (1956) p. 190. Tripathi points out that European merchants could hold land in the name of their Indian gomastas. This, however, caused problems from time to time before the law courts. This means of circumventing the Company regulations was not open to capital deficient sugar planters.

¹³⁹ B. S. Singh, *European Agency Houses in Bengal (1783-1833)*, (Calcutta, 1966). Singh described the fragile financial position of the agency houses and their financial collapse, 1828-33. A major cause of their demise was their exposure to indigo, a commodity that experienced wild fluctuations in price due to over-supply.

demand.¹⁴⁰ Financial support for a sugar industry, be it pre-industrial or employing West Indian technology, may have provided an alternative means for capital remittance, possibly less prone to risk than investment in Indigo.

Lending agencies, given security of tenure and therefore less exposure to complete loss of capital in the event of default, may well have loaned capital to commercial sugar planters and, in so doing, widened the planter base and increased export earnings which in turn, may have served to lower interest rates.¹⁴¹ Capital was available in Bengal for such enterprises 1815 to 1833, as A. Tripathi points out. "[This capital] alternatively sought opportunities for trade and investment and found the former barred by the Company's remittance trade and the latter by the laws against European ownership of land."¹⁴² Simply put, from 1793 to the late 1820s, the economic management of Bengal was attuned to the remittance trade. The Company government and those who administered India did not favour European settlement or have common cause with those who did. British administrators in India were culturally bound to the home country, India was not their permanent home, but a place to enhance their financial and cultural status. The British community in India, as P. J. Marshall points out, "was not a settler or creole community, acquiring land and sinking roots into India that went deeper with each generation."¹⁴³ Instead they were transient and homeward looking.

¹⁴⁰ P. J. Marshall, *The New Cambridge History on India II.2: Bengal the British Bridgehead, Eastern India 1740-1828*, (Cambridge, 1987), p. 109.

¹⁴¹ *Select Committee Affairs 1831*, Evidence of Bracken, private merchant, pp. 12-16 passim, also pp. 181-2 and pp. 253-4 Evidence of William Chaplin and Robert Davidson East India merchants, both said that difficulty in obtaining land tenure was related directly to problems of raising capital.

¹⁴² Amal Tripathi, (1956) p. 190.

¹⁴³ P. J Marshall, "British Society in India under the East India Company, pp. 89-108, *Modern Asian Studies*, 31, 1 (1997) p. 91

In the post monopoly era, the policies of the Company government continued to offer little assistance to the establishment of export sugar production, be it one using West Indian or pre-industrial technology. India, as we shall see, was perceived by many within the body politic, through the prism of orientalism, as a society where progress was hampered by societal mores, a perception exploited by the West Indian lobby as they sought to prevent access of East India sugar to their protected British market on equal terms.

In 1823, for example, when the Company at last gave serious support in parliament to the equalisation of East and West Indian sugar import duties, these perceptions of the sub-continent were at the root of some comments in the debate. In this debate, the West Indian lobby sought to cast doubts on the sub-continent as a reliable source for sugar. In reality, they no longer feared the production potential of India's pre-industrial industry; their concern was India's potential as a gateway for Asian sugar (Chapter 2 above). Although the West India lobby, in common with much of the British body politic, were subject to orientalist perceptions, their main goal was to keep their sugar monopoly in place.

An example of these orientalist perceptions is evident from the reply of William Huskisson, President of the Board of Trade and architect of Britain's economic policy 1823-1827¹⁴⁴, to the motion of Whitmore (President East India Company and Vice President of the slave abolition movement)¹⁴⁵ to appoint a

¹⁴⁴ Anna L. Lingelbach, "William Huskisson as President of the Board of Trade," *The American Historical Review*, Volume XLIII No. 4, (July, 1938), pp. 759-774. p. 760 and 770.

¹⁴⁵ Eric Williams, *Capitalism*, (1961) P, 68. With strong abolitionists such as Zachary Macaulay, the Thornton family, James Cropper and Thomas Whitmore associated with East India interests it was hardly surprising that an attack on the sugar monopoly should come at this time. As Ragatz (1826) pp 357-361 points out, West Indian arguments about the detrimental nature of the Navigation Laws were not as strong in 1823. This legislation, the Reciprocity of Duties Act of 1823, was the first major breach in the British Navigation Laws, allowed a measure of freedom of trade between the West Indies and the United States; this was one of Huskisson's economic reforms. See also David B. Davies: James Cropper and the British Anti-Slavery movement 1821-1823, " *Journal of Negro History*, Vol. XLV No. 4 *October 1960) pp. 2410-258 passim.

committee to look into the sugar duties. In reply to Whitmore's suggestion that increased sugar production might serve to replace the livelihoods of Bengal spinners and weavers, lost through textile and yarn imports from Britain. Huskisson commented: "The manufacturers of muslins did not possess the skill or were prevented by caste" from producing quantities of sugar sufficient to make up any production decrease in the West Indies, should they lose their sugar monopoly."¹⁴⁶ Huskisson, in 1823, may not have been aware that many Bengali spinners and weavers had turned to peasant cultivation, and as such may well have helped to increase sugar cane production in the event of a lower tariff barrier in Britain. This is perhaps, a point in his defence.¹⁴⁷ His comments that caste was an impediment to sugar production, although without foundation, were indicative of perceptions of India in Britain.¹⁴⁸ However, it should not be entirely discounted that his opposition, in part at least, was a result of his recent election as the member for Liverpool; his constituents' interests lay with the West Indian planters and merchants.

The West Indian lobby's strongest card in 1823 was the perceived inability of the largely pre-industrial industry on the sub-continent to produce sugar in

¹⁴⁶ *Parliamentary Debates*, Vol., IX, (London, 1823) New Series, pp. 463-467 passim.

¹⁴⁷ P. J. Marshall, *The British Bridgehead*, p. 13. It is quite possible the Huskisson was not fully aware of the depressive effect of British textiles on weavers and spinners in Bengal. The effect on the livelihoods of Bengali weavers was quite pronounced by 1817-18 when, for the first time, imports of British textiles surpassed exports of Bengal textiles. Not until the mid 1820's did imports begin to affect spinners. By 1828, British cotton yarn imports were causing a serious decline in the employment of Bengal weavers. There is a large body of work on the subject of de-industrialisation in the nineteenth century, amongst which are: A. K. Bagchi, "De-Industrialisation in India in the Nineteenth Century: Some Theoretical Implications," *Journal of Development Studies*, XII, 2 (1976), pp. 135-164 and "A Metrological Critique of A. M. Bagchi," *IESHR XIV*, 2 (1979) pp. 105-146.

¹⁴⁸ The source of Huskisson's information about caste is not known. In research for this thesis, no evidence was found to suggest that caste had any effect on indigenous sugar production. It is true that high caste Hindus would not consume sugar that was not made in the traditional or ritually pure manner. In the 1840's in Madras province, there were some difficulties with the harvesting of palm juice from the Brab tree, a major source of sugar in that province. Climbing and tapping the trees was restricted to one particular caste. See *Select Committee Sugar and Coffee (1847-8) Third Report*, p 27, Evidence of J. U. Ellis, partner Parry and Co. Agency House and sugar manufacturers.

quantity. Mr Robertson MP, for example, explained to the House, that the sub-continent was unable to supply sufficient sugar for her own consumption and imported large quantities of sugar from China, Manila and Batavia.¹⁴⁹ He also mentioned white ant infestation and the difficulties this brought to cane cultivation,¹⁵⁰ probably quoting from European sugar planting experience two decades earlier. In an attempt to show that sugar production in the sub-continent, in common with the West Indies, was not entirely free from slavery, he described the caste system as a "wretched system of slavery." Another West Indian supporter, Mr Marryatt MP, was concerned at the threat represented by the vast population of British India. He feared the consequences for trade should another charismatic leader similar to Tippoo Sultan arise, telling the House, "there might be a struggle which led to independence." His implication was that the loyalties of the British West Indian colonists rendered the islands a more reliable source of sugar than the sub-continent.¹⁵¹

The West Indian lobby was exploiting perceptions of India that had their genesis in the period 1760-1793, perceptions that undoubtedly helped to shape British trade policy with the sub-continent. Amongst these views was the long-standing and widespread perception that the sub-continent and all Asian countries were backward. The corruption, greed and fortunes amassed by Company servants, exemplified by the Nabobs,¹⁵² were also negative perceptions. The latter had probably faded somewhat in the public memory by the 1820s, but it is

¹⁴⁹ Much of this sugar was sugar candy. European residents of Bengal thought locally made sugar candy to be inferior. Some of it was the sugar carried by the China fleet on its return journey from Canton, much of which was re-exported from India to Europe, the Middle East or East African destinations. Some was re-exported to Britain 1814-1821.

¹⁵⁰ *Parliamentary Debates* Vol., IX (1823) p. 456

¹⁵¹ *Ibid*, p. 461.

¹⁵² Peter Thorold, *The London Rich: The Creation of a Great City from 1666 to the Present*, (London, 1999) pp.128, 131-32, 145, 184 and passim. Nabobs usually referred to Britons who lived in India during the period prior to the India Act of 1884. They were perceived as having gone a bit "native" and of having made a fortune in the sub-continent.

unlikely that it was entirely forgotten. The long-term opposition of, and pressure exerted by, commercial groups opposed to the India monopoly was another factor. Such groups, with some justification, believed that the monopoly restricted the potential of Bengal as a market place for British manufactures.

Arguably, the most important perception among the British intelligentsia was their view of British India as an oriental other, a concept that became deeply etched in the psyche of many. Linda Colley uses the tiger as a metaphor for this otherness, in connection with the concern many Britons felt with regard to British expansion in India. The Company and informed people in Britain, aware that few Britons were actually present in India, and that administration and defence of the vast territories under Company control was possible only as long as the Company retained the cooperation of its Indian administrators and sepoy soldiers. "For the British", she writes, "the tiger evoked India most tellingly at this stage [before circa 1825] because it was dangerous, beyond knowing and beyond control."¹⁵³

J Majeed, in a discussion of the contribution of British residents to this concept of otherness, argues that Sir William Jones, a Supreme Court judge in Calcutta 1783-1794 and oriental scholar, was a major contributor.¹⁵⁴ He and his colleagues of the Royal Asiatic Society of Bengal promoted the oriental otherness of the Indian past. They studied ancient Hindu texts and myths. They believed a historical narrative could be recovered; Jones's publications of these exotic myths and stories were widely read in Britain. He was a scholar of great intellect, who sought to inform and add to the sparse body of knowledge with regard to Islamic, Hindu and Sanskrit texts. J Majeed is surely implying his British audience was not able to receive this knowledge in the spirit in which he imparted it. A. J Arberry

¹⁵³ Linda Colley, *Captives: Britain, Empire and the World, 1600-1850*, (London, 2002) p. 265.

¹⁵⁴ J. Majeed, "James Mill's the History of British India as a Rhetoric of Reform," *Modern Asian Studies*, 24.2 (1990), pp. 209-224, p. 209.

was strongly alluding to this when he wrote, "London in the late eighteenth century was far too narrow and shadowy a stage for the manifestation of his brilliant spirit."¹⁵⁵

The eighteenth century excesses in of British administrators in India and the growing sense of trusteeship felt by succeeding generations towards British India were to have an outworking in the British parliament in the form of legislation. Successive British governments, subjected to both parliamentary and public pressure, became, in effect, the conscience of Britain toward India. Pitts India Act of 1884 and the changes to the monopoly of 1793, 1813 and 1833 were, to some degree, this conscience in action.¹⁵⁶

One of the great areas of debate and disagreement with regard to the formation of British Indian policy was that between the conservatives and the utilitarians, the latter led by Jeremy Bentham and James Mill. They sought to bring modernity to government and economic management of British India, while the conservatives initially led by Burke, were concerned that the introduction modernity, might adversely affect their perception of the ordered society of the Indian village.¹⁵⁷ The concept of separateness and essential difference between the orient and Britain was strengthened by this scholarly debate between conservatives and modernists. It engendered a negative understanding of oriental despotism and its relationship to the Asian mode of production—this tended to suggest inefficient peasant sugar production; not a helpful concept when trying to promote the indigenous sugar industry of India as a serious

¹⁵⁵ A. J. Arberry, *Asiatic Jones*, (London, 1946), p. 39.

¹⁵⁶ P. J. Marshall, *The British Bridgehead*, (Cambridge, 1987), p.99-100.

¹⁵⁷ Clive Dewey, "Images of the Village Community: A Study of Anglo-Indian Ideology," *Modern Asian Studies* 6, 3, (1972), pp. 291-328. See pages 259, 296 and 305. Burke's perceptions of India were that it should be ruled by Indian institutions and have laws "tender of rank and property." See George D. Bearce, *British Attitudes Towards India 1784-1858*. (London, 1961) pp. 16-19.

supplier to the British market).¹⁵⁸ Ronald Inden, in a discussion on Indology, is critical of the negative aspects of South Asian historical discourse, which almost certainly had its origins in the debate between conservatives and utilitarians circa 1790-1830. He argues:

Indological discourse, hold, (or simply assume) that the essence of India civilisation is just the opposite of the West's. It is the irrational (but rationalizable) institution of "caste" and the Indological religion that accompanies it, Hinduism. Human agency in India is displaced by Indological discourse not onto a reified state or market but onto substantialized caste.¹⁵⁹

The concept of caste and the inability of the oriental mode of production to serve the British market are writ large in Huskisson's speech of opposition to Whitmore's motion. To him, oriental otherness represented a substantial barrier to large-scale sugar production in the sub-continent. Such perceptions did not diminish, but actually grew in strength as the utilitarian viewpoint became ascendant toward the middle of the nineteenth century.

The negative public perceptions of India were strengthened by adverse publicity with regard to some traditional Indian mores. For example, *suttee* (widow burning) and the assassination cult of *Thuggee* both horrified the British public. Governor General Bentinck banned the former in 1829; the latter was largely eliminated through the efforts of Captain Sleeman,¹⁶⁰ who also introduced exotic sugar canes to the Nurbudda valley in 1828 (Chapter 7 below).

¹⁵⁸ Ronald Inden, "Orientalist Constructions of India," pp. 401-446 *Modern Asian Studies*, 29, 2 (1986), p. 421.

¹⁵⁹ *Ibid.*, pp. 402-3.

¹⁶⁰ C. E. Carrington, *The British Overseas: Exploits of a Nation of Shopkeepers*, (Cambridge, 1968), pp. 429-30.

In 1833, the China monopoly ended and, although monopoly was consigned to history, the Company retained a strong economic role in India. Merchants sought to break Company control of economy and they began to agitate for further trade concessions and increased European settlement. They saw expansion of the planter sector as prerequisite to the province competing on better terms with tropical produce from planter colonies.¹⁶¹ There were some attempts at settlement; a few British entrepreneurs received grants of wasteland (land not settled or cultivated by indigenous farmers) in Gorakhpur and Deyrah Dhoon (above). Both regions, however, were a great distance from the coast and any sugar produced there would incur considerable transport costs. These measures, if enacted some ten years earlier on land in Bengal proper, may have brought into being a planter sector capable of substantially improving the economic base of the province, which in turn may have allowed for more political leverage in London.

In the colonial metropole, many groups vied for the attention of the British government, such as the powerful West Indians, the Canadian timber lobby and a small but growing influence from Australian wool and wheat growers. Of the groups domestic to Britain, the landed interests, the Manchester textile group, Birmingham industrialists, the shipping interests of London and those of the out-ports, all exerted some level of influence. The East India interests, as shown in chapters one and two above, were divided. Many had investments in both the Indies and the East India Company was a spent force in trade negotiations by the mid 1820s. The Company and East India merchants, be they supporters or opponents of monopoly, did not have the unity of purpose or influence to strongly

¹⁶¹ P. J. Marshall, *British Bridgehead*, p. 113.

argue for East India sugar in the corridors of power. A strong planter group, however, growing and marketing commodities and contributing considerably to the trade and welfare of Britain, may have been more effective.¹⁶² Such a group could not flourish while the Company and private merchants were preoccupied with the remittance of funds and the promotion of profitable but high risk crops such as indigo.¹⁶³ Although the new Charter Act of 1833 offered European planters a substantial measure of freedom of movement and removed restrictions on land ownership, in reality, it offered them little more than the right to have a presence in the sub-continent. For planters, it was an incomplete victory; the Company government remained unsympathetic and offered them little economic assistance.¹⁶⁴

Chapter 5 will discuss the period 1836-46 when the conditions for investment in sugar production in British India were optimum. It will catalogue and explain the extent of investment in plant and infrastructure in Bengal and Madras during this period.

¹⁶²R. K. Renford, *The Non-Official British in India to 1920*, (Delhi, 1987), p. 16. In 1832, there were 467 European indigo planters and assistants in Bengal. By 1852, a lower figure of 273 British born residents were employed in planting and manufacture in the interiors of Bengal.

¹⁶³ *Ibid*, pp. 105-6.

¹⁶⁴ *Ibid*, pp. 12-14.

CHAPTER 5

Industrialised Sugar Technology and Infrastructure in the Sub-continent 1828-1853.

In chapter four, the first phase of European attempts to build an export sugar industry in the sub-continent based on West Indian technology in the sub-continent circa 1780-1810 was discussed, as were the policies, which, directly or indirectly, led its stagnation. This chapter examines the second phase, when attempts were made to establish an industrialised sugar industry 1828-1853. Unlike the period 1792-1836, discriminatory duties, monopoly and opposition to the entry of East India sugar to the British home market did not hamper Indian sugar exports to Britain. From 1836 to 1846, the political and economic climate was favourable to the development of such an industry in the sub-continent. In effect, the chapter is an examination of the capitalisation of the industry and its technology, with which investors hoped to create a new "British sugar bowl" in the sub-continent. In so doing, it elaborates and deepens the argument of the previous chapter that conditions and events in the sub-continent were, in the final analysis, one of the most significant factors influencing the long-term viability of the industry.

The entrepreneurs investing capital in the sub-continent post 1836, as in the late eighteenth century, often had considerable experience in the West Indies, some were established British residents using locally generated capital, and in contrast to the earlier phase, there was some direct involvement in the industrialised manufacture of sugar by at least one Bengali Entrepreneur. The investors, however, would not find a *tabula rasa*, as those who pioneered the sugar industry of the Americas did. Instead, they would meet with a long

established and thriving indigenous industry, which will be described in chapter seven.¹ Some sugar growing regions of the sub-continent, particularly those in Madras, had a similar tropical maritime climate to the Caribbean, but much of the sub-continent was substantially different, being subject to frosts, inundation and droughts.

In attempting to establish this industry, the entrepreneurs would take one of two paths: producing sugar in an industrialised sugarhouse by processing sugar cane grown by Indian cultivators under their own supervision on land they had leased from Zamindars. The other group purchased raw sugar from indigenous merchants or directly from cultivator manufacturers to produce industrialised sugar for export; they were in effect "refiners." The agricultural, climatic and the commercial environments of the sub-continent would demonstrate to both groups that the task of creating a "British sugar bowl" in Bengal and Madras would be extremely difficult.

During this period, capital and technology flowed into British India in unprecedented amounts and, almost immediately, tall smoking chimneys appeared on the skyline of the Northeast Indian plains announcing the presence of steam engines and the operation of industrialised sugar technology. Contemporary observers may have believed they were witnessing the birth of an industrial age in British India. From the outskirts of Calcutta, the then administrative capital of India, through Jessore in modern Bangladesh, in Santipur (Santipar), in Burdwan modern West Bengal, around Patna, Jaunpur and Mirzapur in Bihar and northward to Gorakhpur, now in Uttar Pradesh, these

¹ Noel Deerr, *History* Vol. 1 pp.49-50. Sugar production in Bengal dates from circa 300 BCE. Maguelonne Toussaint-Samay, *A History of Food*, (Cambridge, 1992) p. 552, citing Natural *History of Su-kung*, seventh century CE, the Emperor Tai-Hung sent artisans to Bengal to acquire knowledge of sugar making.

chimneys became a common sight. From the outset, it should be emphasised that many of these factories were equipped with technology, which in modern parlance was equivalent to world's best practice. A comparison with contemporary industries in their Asian context, such as Mauritius and Java, will show the modernity of the industrial sugar refining industry in Bengal and Madras. Although this endeavour was a short lived episode in the history of British rule in India, it developed sufficiently to produce considerable quantities of sugar, rum and molasses, much of it consumed in Britain or passed through the British emporium to other destinations.

The New Industry and Its Technology

From 1836 to 1845, four factors attracted investors to the sub-continent to create an industrialised sugar industry. These were: diminishing sugar production in the West Indies, exclusion of foreign sugar through high tariffs, high sugar prices in the British market;² decreased freight costs between India and Britain.³ During the first four decades of the nineteenth century, British planters and merchants struggled to attract capital to India; their only way of increasing the size of their businesses was by using capital generated within the Presidencies. This changed quite suddenly when an inflow of speculative British investment capital occurred in the early 1840s,⁴ a period during which Britain appeared to be almost

² P. P. (1857) Vol. XXXVIII, *Tea and Sugar Consumption in UK* pp.1-4. This document offers a detailed edited history of the protected British market, 1801-1856.

³ *Report of the Select Committee of the House of Lords Appointed to Consider the Petition of the East India Company for Relief*, (1840), Evidence of Andrew Sym, p. 68. Sugar cost £3.15 per ton when carried as ballast cargo, 1836-1840.

⁴ *Select Committee Sugar and Coffee* (1847-8), First Report, p. 185, Evidence of Nathaniel Alexander, East India merchant. The capital that fuelled the sugar boom in Bengal was British in origin and invested as a direct result of the confidence British lenders felt about the continuation of imperial protection after the election of Peel. This capital had interest rates as low as 2 to 3 percent when the usual rate in Bengal was 10 to 12 percent. *Ibid*, First Report p. 119, Evidence of Henry St. George Tucker, Chairman of the East India Company. Tucker believed that while the reduction in duty in 1836 was an important factor, low interest rates during the early 1840s and low freight rates were also an important contribution.

"awash" with capital.⁵ The extent of these funds was such that an observer long associated with the British capital market remarked: "There had been a larger continuance of a plentiful supply of money than had occurred in the memory of the oldest capitalists [sic]."⁶ A sugar industry in the sub-continent with what promised to be low production costs and a protected British market with high wholesale prices and finite supply, appeared an attractive investment. The investors had no need to fear competition from the major sugar producers Cuba, Brazil, Java or other foreign West Indies islands, high import tariffs saw to that. Conditions were indeed favourable and, had every appearance of remaining so for the medium term at least. Their investment in India appeared almost gilt edged. The Tory government, elected in 1841 when this industry was just getting in its stride, was sympathetic to colonial trade and protection.⁷ This government,

⁵ Blair B. Kling, *Partner in Empire* (Calcutta, 1981), p. 211. G. J. Gordon, the secretary of the Union Bank in Calcutta, reported that during 1843-44 there was an unprecedented inflow of funds to Bengal. This forced interest rates down and reduced the amount of business the bank transacted through its own bills.

⁶ D. Morier Evans, *The Commercial Crisis of 1847-1848*, Second Edition (London, 1849), p.2.

⁷ *Select Committee Sugar and Coffee*, (1847-8), First Report p. 10 Evidence of H. M Kemshead, Chairman Dhobah Sugar Company and Nathaniel Alexander, East India merchant, p. 185. The move from a regime of colonial protection to one of gradual equalisation of sugar duties came as a complete surprise to the planter community in India. See also W. P. Morrell, *British Colonial Policy*, (1966), pp. 171-2. The election of the Tories was largely because the nation was tired of the Whig administration. The sugar duty question became the trigger that precipitated the Whigs' downfall. Peel and his faction opposed any scheme that allowed slave grown sugar into Britain. They believed that Mauritius and India could produce enough sugar to make up for the deficiency from the British West Indies. Supported by West Indian planters and others who had a stake in the continuation of the old colonial system, Peel was able to defeat the measure. This gave the colonists confidence that the system of imperial preferences would remain in place. Robert Stewart, "The Ten Hours and the Sugar Crisis of 1844: Government and the House of Commons in the Age of Reform," *The Historical Journal* XII, 1, (1969), pp. 35-57. P. 35-, and D. R. Fisher, "Peel and the Conservative Party" *The Sugar Crisis of 1844 Reconsidered.* *Historical Journal*, 18.2, (1975), pp. 279-308. The proposal to reduce the duty on foreign grown sugar and to allow slave grown sugar into Britain was defeated by 317 to 281 votes. This defeat became the catalyst that propelled Peel into power. In the subsequent election, Peel and the Tories fought on a platform of protectionism and Protestantism. See also p. 38. As late as 1844 the support for the Peel government seemed rock solid. They received majorities of 100 in the House, and the opposition appeared unable to make any progress. There was, in early 1844, no indication to sugar planters in the British colonies that any change to the system of imperial preferences would take place. Noel Deerr *History* Vol. 2, p.446. The study of earlier parliamentary debates shows that the idea of free trade in sugar had never entered into the philosophy of either party. No one anticipated the wave of Cobdenism and Manchester economics, which was to distress the West Indies and to delay until the 1930s the establishment of an industrialised sugar industry.

although a coalition of diverse interest groups, had a comfortable majority and a leader perceived as a protector of the colonial interests, Sir Robert Peel.⁸

The extent of this capital and the industry brought into being was considerable. Of the many factories erected in North-eastern India and Madras between 1828 and 1853 (Appendix 4 Table 1), almost all were equipped with steam engines.⁹ A few grew cane or purchased it from peasant cultivators and crushed it with steam driven mills, others used steam power to operate equipment in the sugarhouse itself. The plantation sugarhouses and industrialised sugar factories were equipped with the whole range of sugar making equipment, some of it older technology but much of it based on the latest designs. Among these were, horizontal steam driven cane-crushing mills, defecation cisterns, steam heated evaporation pans, filtration systems, pumps and other equipment. They were housed in expensive stone buildings with tall chimneys to carry away the smoke of steam engines, along with curing houses to dry and prepare the sugar for export. In the Tirhut district, then in North Bihar, now eastern Uttar Pradesh, indigo planters formed themselves into an association to purchase the equipment to manufacture industrialised sugar; they also purchased steam powered water pumps for irrigation.¹⁰

Only a small fraction of this expenditure went into sugar plantations. Most was invested in factories (refineries), which purchased raw cane or palm *gur* from indigenous cultivators and merchants at sugar *hats* (seasonal markets) up country, or in the Calcutta market. In many of these factories, the sugar produced

⁸ *Annual Register* (London, 1841), p. 147. The Tories won 368 seats to the opposition's 292, a clear majority of 76 seats.

⁹ Anonymous, Bengal Hukaru, (Calcutta 29th November 1845). The publication lists over 100 steam engines in India 1836-1850, of these 25 were in sugarhouses, 6 at ports, 8 collieries, 6 flour and rice mills, 4 paper factories, 8 government departments, 20 on ocean going vessels, 22 on river steamers, 10 in agency house packets, 21 in tugs and pleasure craft, and 15 in miscellaneous use.

was not just colonial muscovado commonly made in the British West Indies, it also included sugars of sufficiently high quality, that from 1845 it would be classified by British customs as equal to "single refined," or "white clayed". Some factories were also equipped to distil molasses into rum for export to Britain; while in Madras they distilled palm sugar molasses into country spirit (arrack) for domestic consumption.

An indication of the volume of machinery entering the sub-continent is available in the following table, the figures, however, do not include the cost of installation or erection of expensive buildings, nor do they include the value of

Table X1 Exports of Machinery and Millwork from Britain to India 1835-47

	1835-45	1835-47	1846	1847
Exports to India	£615,437 ¹¹	£858.147	£102.865	£239.579
Exports ex Britain			£198.975	£139,848 ¹²

equipment, which, by 1840 was frequently fabricated in Bengal, where the cost of manufacture was higher, but the close proximity of the manufacturer undoubtedly, offered advantages in the case of repairs or replacement. Amongst these items were malleable iron cisterns, evaporators, clarifiers,¹³ even the most sophisticated apparatus, the vacuum pan was fabricated by the engineering company Jessop and Co. in Calcutta,¹⁴ J. Bagshaw MP informed the Select Committee of 1847-8 that steam engines were also manufactured in Calcutta during this period.¹⁵

Although a discussion of sugar mill and sugarhouse technology in Indian has been briefly touched upon by other sources, a more comprehensive survey of the industry will be given. Some indication of the capital required to set up a sub-

¹⁰ Leonard Wray, *The Practical Sugar Planter*, (London, 1848), p. 264.

¹¹P.P. 1852, (144) XXXI.317, *Account of Exports and Imports Great Britain and the Colonies, 1846-50*.

¹² *Ibid.*

¹³S. H. Robinson, (1849). pp.180-1.

¹⁴ *Ibid.*

¹⁵ *Select Committee Sugar and Coffee*, First Report, p 36, Evidence of John Bagshaw M.P.

continental plantation sugarhouse is available courtesy of S. H. Robinson, a sugar planter at Burdwan. This complex, complete with two condensing engines, a crushing mill, a seven foot vacuum pan, and other equipment had a total cost up to the point of production of £11,000.¹⁶ An indication of the scale of investment can be gained when it is realised that 80 European plants were located during research for this thesis. Sixteen were equipped with vacuum pans, two operated more than one, many installed one or more Wyatt, Gadesden or Wetzel evaporators or perhaps a Knellor system, only two were not equipped with a steam engine (Appendix 4 Table 1). Robinson's calculations when used as a guide indicate an investment of £880,000 in buildings and technology. The figure of £11,000 per plant, however, does not accurately reflect investment at the larger establishments Dhobah Sugar Company, Gladstone-Wylie, Cossipore and some factories in Madras. At these places, capital investment was considerably higher. In addition, capital investments were made in rum distilleries in Bengal and arrack distilleries in Madras.

The largest cluster of European run plantations was in the district of Tirhut and the *pargannahs* of the district of Sarun bordering Tirhut (Eastern Uttar Pradesh). Here some 86 indigo planters grew cane and processed it into sugar,¹⁷ 38 are known to have possessed steam engines, and in all probability, virtually all had at least one small condensing engine.¹⁸ One of these establishment owned by Mr A. Nowell, invested £25,000 in buildings and machinery.¹⁹

¹⁶ S. H. Robinson, (1849) p. 86, and Noel Deerr *History Vol. 1*, p. 56. Robinson had considerable experience in India, both here and in Mauritius, his name was still visible on rusting machinery many years later.

¹⁷ *Thacker's Bengal Directory* (Calcutta, 1881), In the Tirhut region of Muzaffapur and Darbhanga circa 1850, there were 86 European indigo/sugar plantations.

¹⁸ A Wyatt, *Statistics for the District of Sarun Consisting of the Circars of Sarun and Champaran*, (Calcutta, 1848), paragraph 3. The report shows ten steam engine indigo sugar factories in the district. A. Wyatt *Geographical and Statistical Report of the District of Tirhut* (Calcutta, 1848), pp. 58-9 Index b, This report

The actual horsepower of each engine depended entirely on the amount of equipment installed. For example, a factory equipped with both crushing mills and vacuum pans would need a larger engine, but with Wetzal or Knellor evaporators, a smaller one would suffice. The commonest range of horsepower in the British East Indies appears to have been 10, 12, 16 and 20.²⁰ Leonard Wray, in a discussion of the capabilities of steam engines in the 1840s, pointed out that by that time high-pressure models had begun to replace the old low-pressure condensing engines. In his opinion, a ten horsepower engine with a cylinder of twelve inches diameter operating at 25 pounds per square inch produced 15-horse power, enough to drive a mill and operate a vacuum pan or several Wetzal evaporators. An engine with a thirty-inch cylinder would produce 16 horsepower, sufficient to drive a crushing mill, a vacuum pan or as many as six Wetzal evaporators.²¹ The high-pressure engines were better suited to Indian conditions because they used less water and fuel than the earlier condensing engines; another reason why these engines may have been common was that by the late 1830s, problems associated with high pressure engines such as bursting boilers were not as frequent.²² Although these engines were complex in that high-pressure operation called for them to be equipped with safety valves stop cocks and floats, but they were capable of generating enough steam to power a number of appliances.²³

records 29 similar installations, most of which had outstations where they purchased and stored raw gur prior to transportation to the main factory.

¹⁹ *Select Committee Sugar and Coffee*, First Report, p. 32 Evidence of John Bagshaw MP.

²⁰ *Ibid*, Evidence of Mr. H. Hunter, sugar planter, Mauritius.

²¹ Leonard Wray, *Sugar Planter*, (1848) p. 295.

²² G. R. Porter, *Nature and Properties*, (1843), p. 146.

²³ Lock Warnford Charles C, Wigner G. W. and R. H. Harland, *Sugar Growing and Refining*, (London, 1882), p. 155-156. In 1827, William Fawcett and Company patented what was a series of seven sugar crystallisation pans using a high-pressure steam boiler. The boiler was large enough to supply five pans equipped with steam jackets and a steam engine to drive the crushing mill; with two other pans heated by the hot air from the boiler flue.

The range of equipment installed at plantation sugarhouses in Tirhut and Sarun, both over a thousand kilometres distant from the sea was considerable, consisting of vacuum pans, Wyatt, Wetzal, Gadesden or possibly Knellor evaporators and steam powered crushing mills. From 1843 to 1848, Robinson believed that the total investment in machinery and infrastructure was at least £1 million.²⁴

Having acquainted the reader with the range of equipment, a brief overview of the mid nineteenth century sugar mill and sugarhouse is at this stage appropriate. It may well be that the very idea of a large and powerful sugar mill tends to give an impression that this arm of sugar technology circa 1850, was in an advanced stage when compared with the improvements in sugar house technology. As will be shown below, this was not the case.

The Sugarhouse

The most commonly used form of evaporation in the British colonies at the time of the expansion in India was still the Jamaica or English train of open pans. These pans built over the flue of a furnace heated by coal, timber or dried cane trash, had an advantage over the early single pans, in that they allowed quasi-continuous production and were heated from a common source. The problem with such pans was that they were subjected to direct heat, which was difficult to control. This propensity to overheat caused the loss of some product through caramelisation (burning or darkening the sugar). In an effort to overcome this problem, less direct methods of heating the syrups gradually came into being. By the late eighteenth century, pioneers developed the use of steam from boilers as the heat source. Open pans were heated by a steam filled hollow metal jacket

²⁴S. H. Robinson, (1848) p. 111.

surrounding the pan, by steam piped into a pan with a double bottom or into a serpentine pipe below the level of the juice, effectively separating the juice from the fierce heat of the fire. A valve fitted between the pan and the heat source allowed the pan man greater control: he could shut off the steam or allow cold water to enter, by utilising heat in this way caramelising of syrups was theoretically lessened, increasing the amount of quality finished product (see chapter seven above).²⁵ It is also possible that some of the pans installed in India could be swivelled, an adaptation that allowed the sugar maker to invert the pan and empty its contents quickly into the cooling boxes, thereby also lessened the risk of caramelising.²⁶

The vacuum pan²⁷ (Illustration page 191) was quite different from the open pan. Although often situated at the end of the process as the apparatus used to bring the juice to the point of crystallisation, it could also be used to thicken the juice after defecation, and the now much thicker juice was transferred to another vacuum pan to finish the crystallising process. It came into its own, however, as an apparatus to bring the syrup to the point of crystallisation. Clarified and thickened syrup, when heated under vacuum, could be brought to the boil at a lower temperature 140 to 160 Fahrenheit, compared with 212 to 250 in an open pan. The syrup, by use of the vacuum pump, was sucked into the pan to the required depth by the attached air pump, the inlet valve was then closed and the pump a vacuum created. During the boiling to crystal process, condensed steam passed through the double bottom of the vessels and through pipes within the

²⁵ Noel Deerr, *History*, Vol. 2, p.556 Thomas Wood claimed to be the first to use a double bottomed pan in 1785. P. P. 1833 (590). XXXIII.551 *Report of the Experiments on Sugar Refining by Professor Andrew Ure*. Ure used a pan with a double bottom and a control valve, which allowed better control of the temperature.

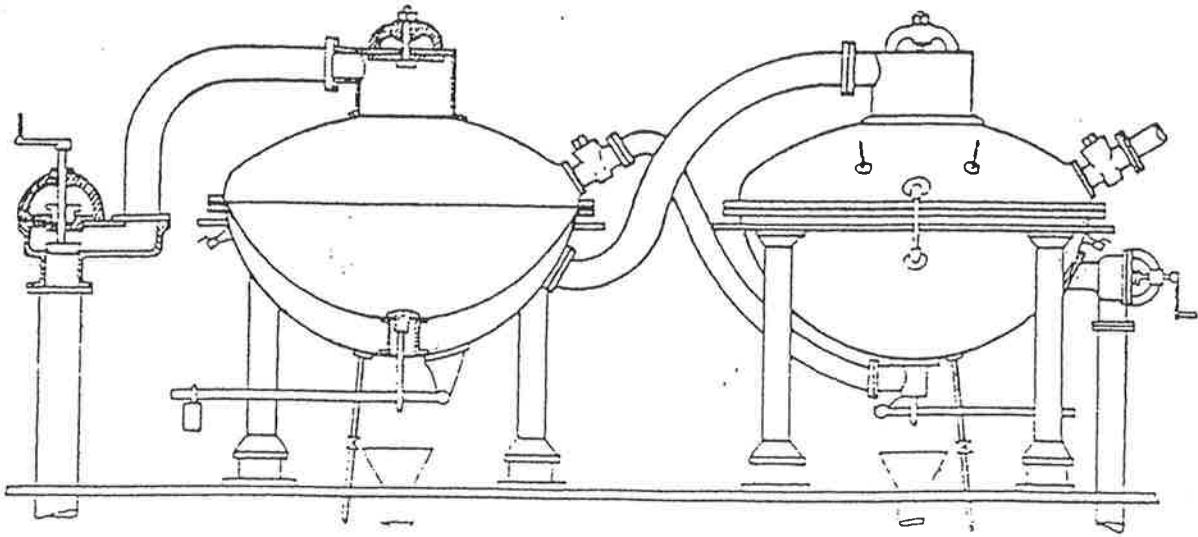
²⁶ Noel Deerr, *History* Vol 2, pp. 556-7.

²⁷ *Ibid*, E. C. Howard invented the concept of the vacuum pan and patented it in 1813.

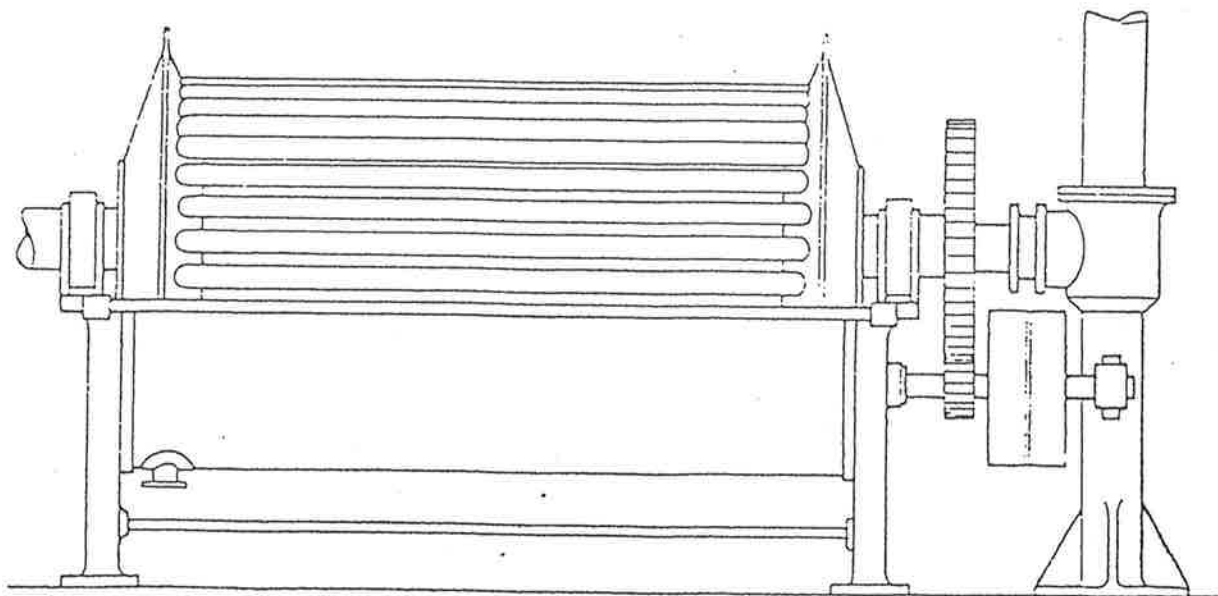
vessel, as the temperature rose and steam was given off, the air pump maintained a constant vacuum by removing these vapours. The lower temperature and indirect nature of the heat allowed the liquor to come to the point of crystallisation without the risk of caramelisation.²⁸ The early models of vacuum pans were difficult to operate, consuming large amounts of water and energy, and were not entirely suitable for use in the colonies where both were at a premium. It is possible that vacuum pans installed in the sub- continent were of a later type, having a new system of condensation invented in 1833 by Degrand of Marseilles. The water in this development, was not injected into a condenser, the steam ran through a coiled tube on whose surface a sprinkle of water continuously fell. The water evaporated through contact with the serpentine, causing the steam inside to condense.²⁹ It is also possible that vacuum pans using the Derosne and Degrand "double evaporation" principle were in use, however, I have not been able to positively identify any on Indian at this time. This modification substituted syrup for water as the cooling fluid, then evaporation of the syrup in the condenser occurred at a similar rate as evaporation in the pan, allowing 'double evaporation' to occur. In this process, the energy produced was more efficiently used, thus reducing fuel and water consumption.³⁰ Vacuum pan technology underwent almost constant improvement during the nineteenth century, and as shown in chapter 3 above, these developments would have far reaching consequences to East India sugar.

²⁸ Dale Tomich, *Slavery in the Circuit of Sugar*, (Baltimore, 1990), pp. 194-195.

³⁰ Dale Tomich, p. 197.



Vacuum Evaporation Pan



Wetzel Evaporator Mark 3.

Appendix four indicates the wide geographical spread of steam powered European sugar houses in Bengal and Madras, establishments equipped with the whole range of technology, the appendix indicates some had vacuum pans while other had a variety of other types of evaporators and equipment. The following discussion attempts to shed some light on the diverse nature of technology present in the sub-continent. As mentioned above, the major advance in sugar making technology was the Howard vacuum pan patented in 1813. Wyatt developed the first disc type evaporator in 1821,³² in 1827, Cleland obtained a patent for a high-pressure version of disc evaporator;³³ and the Wetzal and Gadesden pans were a further development of this type of pan. Around 1844, it is possible that the Wetzal evaporator (Illustration page 191), which acquired its name from its inventor, a French chemist, came into use at a time when the sub-continental industry was in its developmental stage. Deerr suggests the pan was initially used in Reunion before 1845, with another installed in Province Wellesley in 1845.³⁴ Leonard Wray claims to have achieved some familiarity with the operation of a Wetzal and a similar evaporator, the Gadesden pan³⁵ in Province Wellesley.³⁶ He, however, was uncertain as to whether the pans installed in the Province at that time, were Gadesden or Wetzal,³⁷ but was certain of their assembly in the colony from imported drawings, and their use at the plantation level in 1844. Apparently construction was not difficult, their assembly and operational phase took just a few weeks. If these drawing were also available in Calcutta in 1844 or 1845, then Jessop and Company had the ability to construct

³²W. C. Lock, et al, (London 1882), p. 533 British patent No. 4130

³³Noel Deerr, *History Vol. 2, p. 556*

³⁴*Ibid*, p.558.

³⁵W. C. Lock et al p. 534 the Gadesden pan received a British patent in 1845 No. 10474.

³⁶ Leonard Wray, (1848) p. 369.

³⁷*Ibid*, pp.301-2.

wood or by the coal mined in the Birbhum hills,⁴⁷ the source of power and heat for a process that would turn cane juices, palm sap or re-melted crude indigenous raw sugar into a product suitable for the British market.

Not all of these installations were state of the art. Arthur Crooke, a Liverpool merchant, established a plantation at Jummoah in Tirhut in 1840 where he utilised a mixture of old and new technology, investing £13,480.⁴⁸ In Burdwan and Jessore, the Dhobah Sugar Company invested £130,000 in two main plants and some outstations; the main plants used the latest technology to convert raw sugars into export quality sugar. Other refineries equipped with the latest technology were the Gladstone Wylie plants in Jessore at Chaugachha,⁴⁹ the Cossipore factory near Calcutta and most of the Parry and Binny factories in Madras. In addition to these were plants in northeast India such as Albion, Ballicol, Bellaghatta⁵⁰ and the Rosa factory at Shahjehanpore in the North West Provinces was an important gur refinery and manufacturer of "country spirit," arrack.⁵¹

The older technology of open pans continued in use at the palm gur refinery at Cuddalore in Madras⁵² and in the smaller factories in Northeast India. Of the eighty European factories found during research for this thesis in North-eastern India and Madras Province, fourteen were equipped with vacuum pans. Several of them, certainly the Madras factories of Parry and Company at

⁴⁷ Anonymous, "The Right Bank of the Hooghly," pp. 476-520, *Calcutta Review*, Vol. IV, July-December, 1845. p. 479. This article claims that the Birdhum coalmines, owned at that time by a subsidiary of the Dhobah Company, provided coal for 150 steam engines in Bengal.

⁴⁸ *Select Committee Sugar and Coffee*, First Report, p. 18.

⁴⁹ J. Westland, *A Report of the District of Jessore*, (Calcutta, 1871). Paragraph 7.

⁵⁰ *Thakera Bengal Directory*, (Calcutta, 1869) p. 380.

⁵¹ Sir George Watt, *Commercial Products*, (1908), p. 956.

⁵² *Select Committee Sugar and Coffee*, Third Report, p. 28.

Bandepollium and Binny's at Nellikuppam, had two pans, as did some of the bigger factories in Bengal (Appendix 4, Table 1).

A comparison with contemporary sugar industries in an Asian context, Java, Mauritius and the Straits Settlements, where European technology and capital was also extensively in use, serves as a good yardstick by which to measure the capital investment and modernity of the technology in the sub-continent. Such a comparison shows quite incontrovertibly that the British Indian sugar manufacturers of the 1840s, were on the front line of technological advance, and rather more problematically, in some aspects they might have been in advance of any of their leading Asian counterparts.

The sugar plantations in Mauritius had been able to export to Britain at the same duty as the British West Indies since 1825; consequently, some European technology, particularly cane crushing mills and steam engines, were in common use before 1840 (see Table X below). In Mauritius, steam defecation, the separation of vegetable and other waste matter before evaporation did not become widespread until well into the 1850s.⁵³

Table X11 Cane mills in Mauritius 1828 and 1843

	Steam power	Water power	Animal Power	Wind power	Total
1828	51	106	20		176
1843	158	65	5	2	230 ⁵⁴

The Knellor system (above) first appeared here in 1838 at the Bassin factory.⁵⁵ The vacuum pan was first introduced to Mauritius in 1844 with one each at the Phoenix and La Bourdonnais estates,⁵⁶ and a further vacuum pan was installed at the estate of H. Hunter in 1847; Derosne and Cail manufactured

⁵³ *Ibid*, p. 120.

⁵⁴ A. North Combes, (1937) Appendix IX, p. 165.

⁵⁵ *Ibid*, p. 119.

⁵⁶ Noel Deerr, *History Vol. 2*, p. 562.

all three.⁵⁷ The first Wetzal, as mentioned above, came to Mauritius in 1845. It would seem, however, that much capital investment went into building the *purgerie*. This consisted of a large cistern, which received hot syrup from the open pan; at the bottom was a lattice, on which were metal barrels with canes inserted through the bottom, this allowed the molasses drained. The crystallised sugar remained in the barrels.⁵⁸ The *purgerie* produced good muscovado. The molasses were re-boiled and these produced a low brown sugar, this apparently was much in demand in the Australian colonies and the Cape of Good Hope.⁵⁹ Rum distillation was not particularly large until after 1848.⁶⁰ Total investment in sugar machinery was of the order of £500,000 1843 to 1848,⁶¹ little of this, however, was invested in the latest technology. Technological progress in Mauritius was slow; Combes tells us that eighty percent of the estates were still making sugar with a train of open pans in 1852.⁶² Despite being able to import to Britain at lower rates of duty for eleven years longer than the sub-continent, the technology in Mauritius, particularly in the sugarhouse, compares unfavourably with industrialised sugar manufacture in India.

In Java during the 1840s, the number of factories fell short of those in the sub-continent, but the technology was of late origin.⁶³ Some European owned

⁵⁷ *Select Committee Sugar and Coffee*, First Report, p. 210, Evidence of H. Hunter, sugar planter and merchant of Mauritius.

⁵⁸ A. North Combes (1937), p.120.

⁵⁹ *Select Committee Sugar and Coffee*, First Report, p. 210, Evidence of H. Hunter.

⁶⁰ P.P. 1847-48 (749) XLVI.323, *Papers Relating to Distress in the Sugar Producing Colonies*, pp. 346-351 Passim. Before 1949, the distillation of rum and arrack in Mauritius was predominantly for domestic consumption. This rum was very cheap and caused considerable problems with drunkenness. As means of disposing of the molasses other than by distilling rum, Vesou sugar became a major export. This sugar contained a high proportion of molasses, and was popular in some British colonies. In an effort to relieve the distress caused by the 1846 Sugar Act, from 1848 the British government allowed drawbacks on the annual rate of still duty, providing the rum was exported.

⁶¹ *Select Committee Sugar and Coffee*, Second Report, p. 24. Evidence of E. Chapman, Merchant, Port Louis Mauritius.

⁶² A. North Combes, (1937), pp. 117-118.

⁶³ Soetrisno Loekman, *The Sugar Industry and Rural Development: The Impact of Cane Cultivation for Export on Rural Java, 1830-1934*, PhD Dissertation (Michigan, 1980), Imports of machinery to the Dutch

factories in Java operated steam powered horizontal mills but many continued to use water powered mills; the availability of flowing water during the sugar campaign ensured this would continue for some years. By 1848, twelve vacuum pans were in operation, with another in the process of installation. The locations were: Sourabaya 2, Besoeki 5, Samarang 1 and a further five grouped together at Tegal. The majority were Derosne and Cail pans or pans based on their designs, with one Howard pan.⁶⁴ Deerr points out that of the 95 sugar factories contracted by the colonial government 54 were using vacuum pan technology.⁶⁵ The use of charcoal to decolourise and clean juice before evaporation came into use in Java during the 1840s, but it was not until the end of this decade that it was first used in India at the Cossipore factory of Hardman, Howarth and Company.⁶⁷

A significant difference between the industries of British India and Java lay in the local content of the technology; local manufacture of what was then modern technology, resonates with possibilities for the export of skills from Britain to the sub-continent. Engineering works such as Jessops of Calcutta were capable of the manufacture of open pans, clarifiers and other many basic pieces of equipment and even sophisticated technology such as vacuum pans and steam

East Indies, much of which was for the sugar industry, had an annual average of 1.48 million guilders 1830-1838, 1.79 million 1840-49 and 2.02 million 1850-59.

⁶⁴ NHM 9506= Opgave wgens de op Java werkende Suikerfabrieken op Java [Batavia, 1848]. I am indebted to my supervisor, Associate Professor G.R. Knight for this information.

⁶⁵ Noel Deerr, *History*, Vol. 2 p. 468.

⁶⁶ John Scoffern, *The Manufacture of Sugar in the Colonies and at Home*, (London, 1848), p. 91. Although evidence of the effectiveness of sugar technology, particularly vacuum pans, is available in the sub-continent in only a small number of factories, it is very likely that in many locations they were not used to their full advantage, as was the case in other colonies during this period. Dr John Scoffern was critical of the use of new technology by colonial planters, particularly with regard to the way in which some of them operated their vacuum pans, citing stiff or over boiling of sugar as a common occurrence. This practice led to the complete separation of molasses and sugar. A direct result of this practice was the need for liquoring to improve its colour, which led to additional loss of product. He also quotes a letter from Dr Evans, (possibly E. W. Evans, the author of *The Sugar Planters Manual*, (London, 1847)), who wrote of vacuum pans in Java being fitted with large apertures through which the stiff boiled sugar was shovelled out, an occurrence that slowed production and added to the original cost of the pan. The sugar at that stage should be crystalline, still coated with molasses, damp and readily pumped out without manual assistance.

⁶⁷ W. W. Hunter *A Statistical Account of Bengal*, Vol. 11 (Calcutta, 1875), pp. 288-89: The English Process.

engines (above). In Java, as G. R. Knight points out, from circa 1850 repairs could be made to major pieces of equipment by resident engineers in some factories, which often called for the broken machine to be taken to the plant where the engineer resided. The "motif" in Java, however, was not of local manufacture but importation of machinery and spare parts.⁶⁸

Steam Powered Cane Crushing Mills.

Steam crushing mills are by many, seen to be the quite unproblematic key hallmark of modernity for sugar production in the mid nineteenth century. The reality is quite different; they were in fact, still in an early developmental stage in the 1840s. These extremely heavy pieces of equipment were difficult to transport, capital intensive, and installation costs were high, successful installation required the skills of an experienced engineer.⁶⁹ Operational problems were common, amongst which was poor juice extraction, jamming through incorrectly feeding cane into the rollers, breakdowns caused by inexperienced operators, the high initial cost of spares due in part to the long distances from the plantation to the manufacturers of original equipment. The mill had long been perceived by planters as the bottleneck (below), because of difficulties in operation and frequent breakdowns, the steam powered mill, was in effect, the controlling station: if it broke down juice extraction ceased, and if the breakdown was of long duration, the process of sugar making also came to a halt.

The configuration of cane mills typical of this period was one of triple rollers set in an isosceles triangular mode with the top roller centrally located above the two lower ones. In the absence of hydraulic pressure, the early mills suffered

⁶⁸ G. R. Knight, "Sugar Technology and Colonial Encounters: Refashioning the Industry in the Netherlands Indies, 1800-1942, pp. 218-250 *Journal of Historical Sociology*, Vol., 12 No. 3 September 1999, p. 227 and 232.

from built-in rigidity. The gap between the rollers through which the cane passed was pre-set at a fixed dimension; not until 1858 did a patent appear utilising hydraulic pressure to allow a measure of fluidity.⁷⁰ This, however, was not in common use until toward the end of the century. Consequently, varieties of other devices were developed; in the 1870s, for example, wrought iron rods fixed on the top bearing cap then passing down through to the casing plates below the mill frame. The flexibility in this set up was due to wrought iron being able to stretch without shearing (see illustration on page 201).⁷¹ Because of this rigidity, cane passing through the rollers received less pressure at the outer extremities of the rollers than at the centre. This had two effects upon sugar production: it reduced the juice extraction and any variation in thickness of cane or thicker cane joints allowed the expression of additional impurities into the juice.⁷² The latter problem was almost certainly, common in the sub-continent, where many indigenous canes varieties had a harder outer rind. There is little doubt that Blake and Henley met problems of this nature during their cane crushing operations, as did other planters during the 1840s. Otahieti or other softer exotic canes were the preferred option, where they could be successfully cultivated.⁷³ Shortage of cane

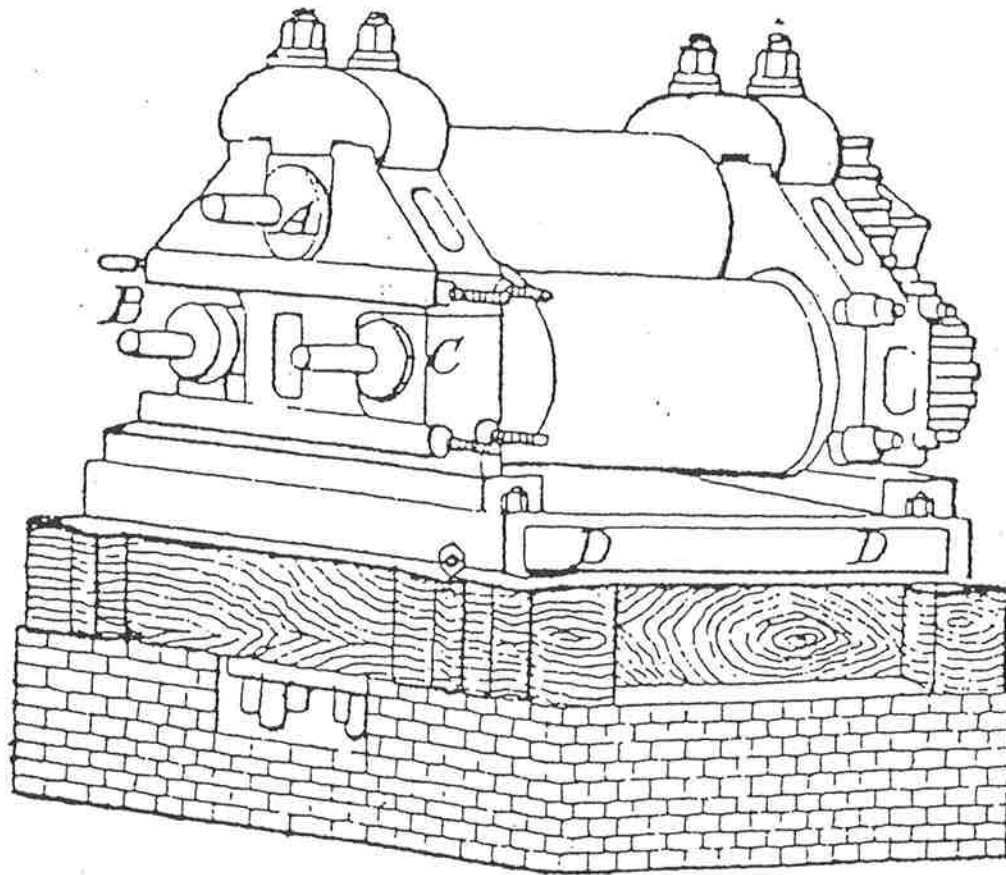
⁶⁹ J. A. Leon, *The Art and Manufacture of Refining Sugar: Including the Manufacture and Re-vivification of Animal Charcoal*, (London, 1859). p. 13

⁷⁰ Noel Deerr, *History*, Vol. 2, pp.541-2. A lever and weight mechanism fixed to the upper roller of some mills overcame this rigidity, circa 1830. Another similar apparatus appeared in Demerara in 1858, and yet another received a US patent in 1890. Deerr is of the opinion, that until the early 1860s the majority of crushing mills had a rigid roller set-up. Manuel Moreno Fraginals, *The Sugarmill: The Socio-Economic Complex of Sugar in Cuba 1760-1860* (New York & London, 1976) pp. 101-2. A lever and spring mechanism, probably similar to that discussed by Deerr, was relatively common on iron horizontal mills in Cuba around 1840.

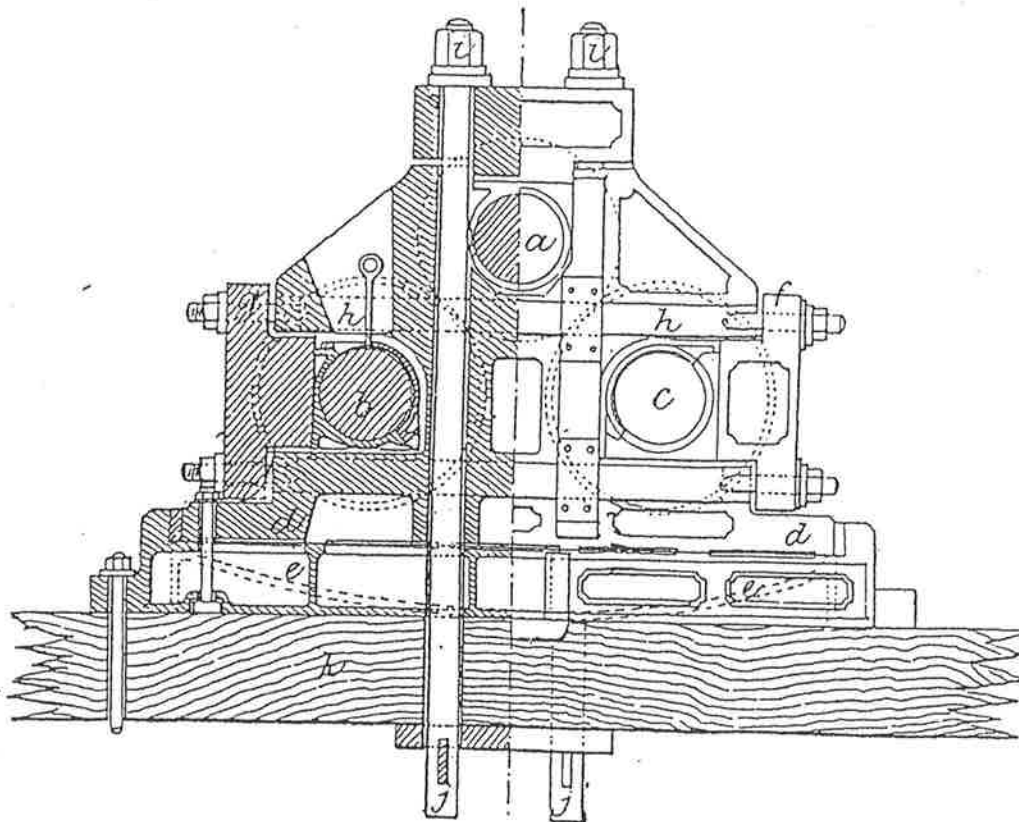
⁷¹ *Ibid*, pp, 117-119

⁷² John A. Leon, *Art and Manufacture*, (1859), p. 8.

⁷³ H. H. Ghosh, *Sugar in India; Its Cultivation, Manufacture and Trade*, (Calcutta, 1938) pp. 49-63 passim. Many of the indigenous canes of India had hard outer rinds, particularly in those areas where jackals and wild pigs were common, these pests tended to eat softer varieties. The hard canes could survive inundation and were less susceptible to drought and the poor husbandry practised by the ryots. N. B. The names given to indigenous varieties by planters at the *Select* Committee of 1847-8 were not necessarily correct. The botanical science necessary to establish the identity of indigenous cane was not available until circa 1920.



Front and Side elevation of horizontal roller mill circa 1875 with malleable iron bolts, which will stretch under strain to allow thicker canes to pass through.



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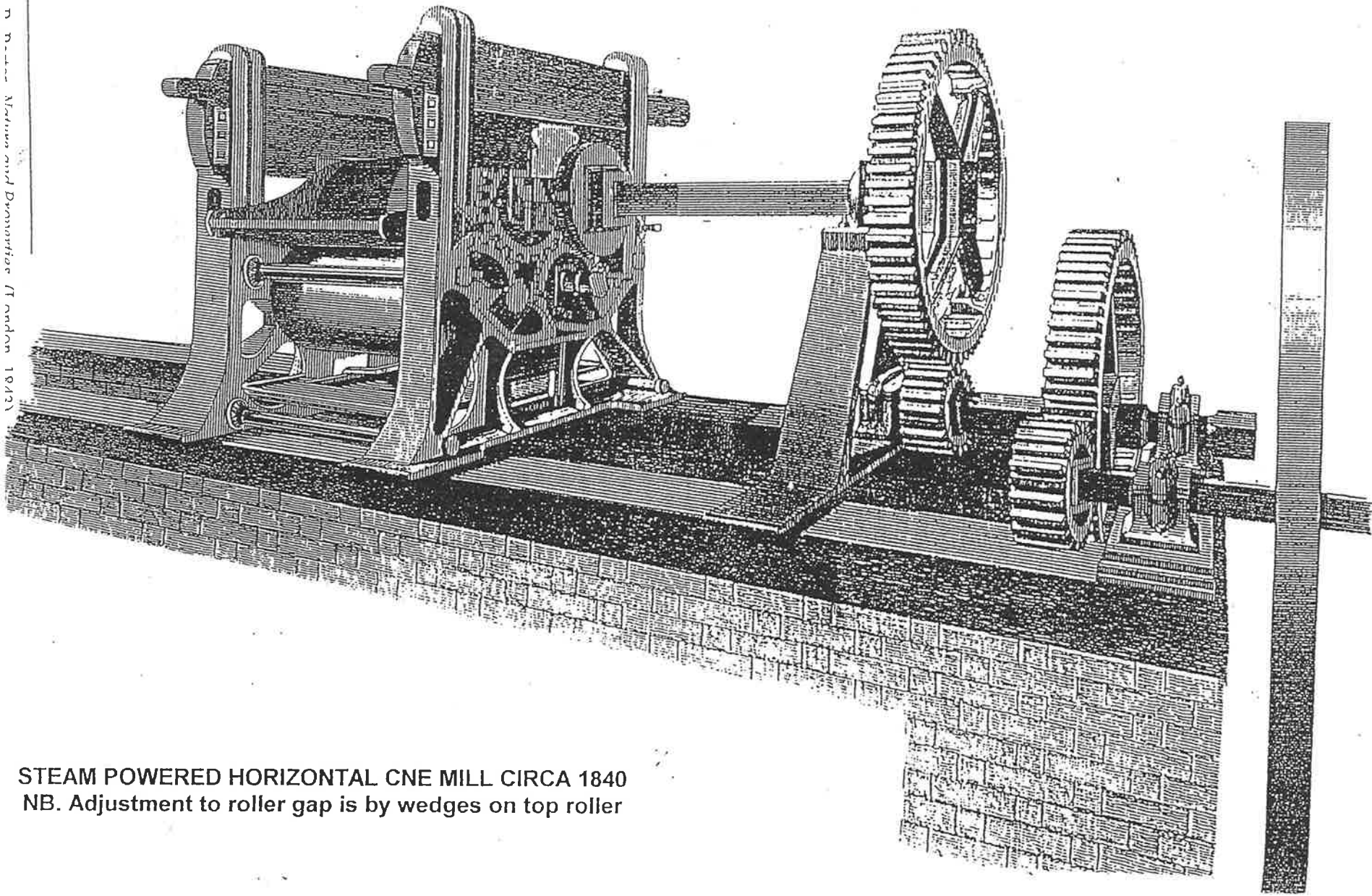
⁷³ Charles C. Warnford Lock et al, *Sugar Growing and Refining*, (London 1882) p. 119.

setts frequent reduced this option. Robinson at Burdwan⁷⁵ and Crooke at Jummoa⁷⁶ had sufficient setts to grow only a portion of their total crop, primarily they grew indigenous varieties, amongst which was the China cane, introduced by Dr Roxburgh in 1795 and noted for its hard rind. Steam powered mills incorporating power, size and weight were powerful and crude instrument with which to crush vegetable matter. Despite this inherent strength, breakages often occurred, particularly if cane was fed into the rollers carelessly, or cane supply ceased before the engineer could reduce power. When this occurred, the mill tended to "fly off" at speed, placing additional strain on pinions and other moving parts in the drive train. Cane blockages also created serious problems, as did sudden restarting of the mill.⁷⁷ Both occurrences tended to 'seize' the mill. The operation of steam-powered mills in the 1840s was still very much a work in progress. Much remained to be learned in regard to their optimum operation: it was not a simple matter of feeding canes into heavy rollers that then easily expressed cane juice. Operational factors such as the optimum revolutions per minute of the rollers and the appropriate feed per minute were vital in obtaining maximum juice extraction. Information on mill operation collated in the Caribbean example, highlight the variability of extraction rates, indicating a variation of 54 to 68.5 percent for mills powered by cattle or steam. (See illustration page 203 for

⁷⁵ S. H. Robinson (1849), p. 117. Robinson's Burdwan plantation ratio of planting between ratoons and cane setts was 25 percent to 75 per cent in favour of ratoons. *Ibid*, p. 15, The China canes introduced from China in 1795, were the only exotic canes from which ratoons could be successfully grown, termites infestation during the dry season destroyed all other varieties.

⁷⁶ *Select Committee Sugar and Coffee*, First Report, p. 15, Evidence of Arthur Crooke. China cane performed well while exotic canes, particularly Otahieti, failed during the first year and gave a variable yield at other times.

⁷⁷ Leonard Wray, (1848) p. 301.



STEAM POWERED HORIZONTAL CNE MILL CIRCA 1840
NB. Adjustment to roller gap is by wedges on top roller

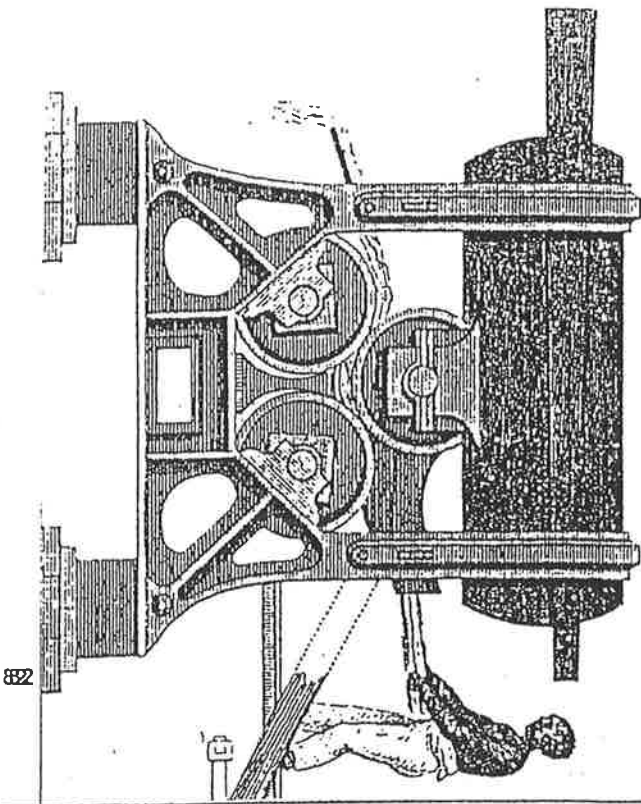
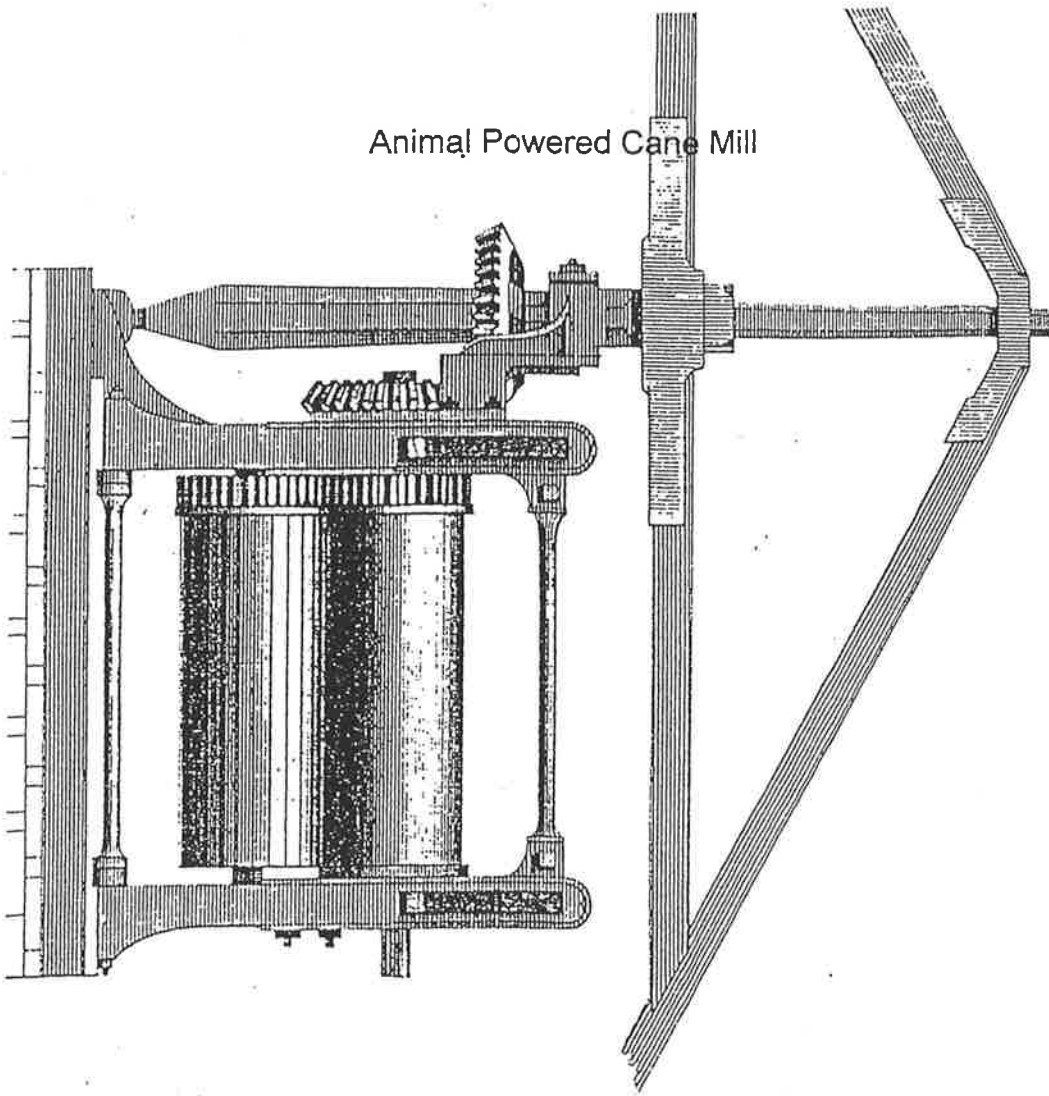
steam driven mill, page 205 for cattle powered).⁷⁹ Data gathered in Trinidad during the 1847 and 1848 sugar campaigns offers perhaps the first real understanding of the important relationship between roller speed and cane feed. In 1847 a 6 horsepower condensing engine powered a mill at 4 revolutions per minute and 24 feet per minute feed, with this set-up the extraction rate was 67 lb. of juice per 100 lb. of cane. In 1848, a further trial produced an even higher extraction rate of 71 lb. of juice from the same proportion of cane, this time the rpm was 3 and the feed 18 fpm. In another test, a vertical mill operated at 57.56 fpm with 22-inch diameter rollers and a horizontal mill operating at 18.84 fpm with same diameter rollers; are also indicative of the importance of the ratio between feed per minute and roller speed. The latter, produced 50 percent more juice at one-third feet per minute feed than the vertical mill.⁸⁰ Leonard Wray, a planter with considerable experience, five years of which were in India, wrote extensively about the operation of steam crushing mills in 1848, a year after these experiments in Trinidad. He gave no indication of any correlation between revolutions per minute and feet per minute, recommending a speed of 47.98 fpm.⁸¹ However, Wray's 1848 publication has the appearance of being a sales pitch for the British machinery manufacturers Messers J. Woods and Company. The question of how expert some contemporaries actually were is also important.

⁷⁹ John A. Leon, *Art and Manufacture*, (1859) p. 10.

⁸⁰ Letter to the Editor of the Port of Spain Trinidad Gazette 1848 cited in J. Leon. (1859), p. 12. See also Charles G. Warnford Lock et al, (London, 1882), pp. 125-128. Mill speeds were still an open question in the late 1870s.

⁸¹ Leonard Wray, (1848) p. 296. Although Wray had professional a relationship with Woods a machinery manufacturer, in common with many planters, he may not have been full aware of the difficulties met with in the operation of these machines. See R. Authauser, "Slavery and Technological Change." *The Journal of Economic History*, vol. XXXIV, (March, 1974) pp. 36-50. p. 60.

Animal Powered Cane Mill



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inches diameter and 66 inches wide and a feed of 9 feet per minute. The rapid mill gave 59.9 pound of juice from 100 pound of cane and the slow mill 77.61 pound from 100 pound of cane.

⁸² G. R. Porter, *Nature and Properties*, (London, 1843).

Messers Wray and Crooke were both considered expert witnesses by the members of the parliamentary *Select Committee* of 1847-1848. They were perhaps typical of those given the label of 'expert' at this stage of development of sugar technology. Their expertise, however, came from experience at plantation level with sugar mills and in sugarhouses. They had little or no knowledge of thermodynamics, metallurgy, or the stress factors of components subjected to great pressures or heat. Their knowledge was experiential; there were no technical schools or equivalent institutions of their time. Real experts were few, but they did exist. B. Moody, for example, with both engineering and sugar refining expertise, demonstrated to the *Select Committee* a wide knowledge of sugar machinery gained from employment as an engineer with machine manufacturers, and through the installation of machinery at plantation level in the British West Indies.⁸³

To the planter, probably lead astray by claims of these so-called experts and advertising material of machinery manufactures, the new steam powered mills seemed to offer an answer to the bottleneck caused by single animal, water or wind powered crushing mills. They believed that the new steam driven mills offered greater throughput of cane. A consequence of this thesis was that cane passed through too fast, and was not under the pressure of the rollers for a sufficient time to gain good extraction rates.⁸⁴ The actual extraction rate was lower than those obtained with cattle or water powered mills that were well set up and maintained.⁸⁵ By the late 1850s knowledge of this problem led Messers Fawcett and Preston of Liverpool to remark that a single set of rollers operating at

⁸³ *Select Committee Sugar and Coffee* 1847-48, Third Report, Evidence of B. Moody, engineer p. 89

⁸⁴ *Ibid*, Third Report, p. 96, Evidence of S. B. Moody, engineer. Without close supervision, it was common practise among mill operators in the West Indies to overcome constant jamming by increasing the gap and thus reducing extraction rates.

important correlation between rpm of rollers and the speed at which canes passed through the mill.

In addition to operational problems were the problems involved in moving of heavy machines from the port of Calcutta to the interiors, a difficult proposition in the middle of the nineteenth century, pre-railway India. Transportation problems with this heavy equipment almost defy imagination. Indigenous riverboats propelled by sail or pulled by ropes attached to the mast, were the only means of transport from the port to sugar "refineries" or plantation sugarhouses hundreds of kilometres inland. Long distances also presented a problem of logistics in transporting sugar to the port, and considerably lengthened the time taken to obtain replacement parts should components fail during the sugar campaign, a factor allowed for by Robinson in his costing of a sugarhouse (above).

In Madras, industrial sugar production lagged a few years behind Bengal, beginning in earnest in 1841. By 1848, however, investment of capital in buildings and machinery was some £200,000.⁹³ Much of this impetus was through the efforts of the Madras agency house, Parry and Company. They built major factories in North and South Arcot, the first at Bandepollium in 1842, Kallakurichi 1844, Nellikuppam in 1845-6 and a further plant at Tiruvnanallur in 1855. They also had a small palm *gur* refinery at Cuddalore. All were equipped with distilleries. With the exception of the Cuddalore plant, they were equipped with steam engines and vacuum pans; those in North and South Arcot were also equipped with steam-powered mills to crush cane.⁹⁴ Several processed both

⁹³ *Select Committee Sugar and Coffee*, First Report, p. 187, Evidence of A. F. Arbuthnot.

⁹⁴ Hilton Brown, *Parry's*, (1954) p. 85.

cane juice and the sap of the Palmyra spathes or Brab tree.⁹⁵ Another plant built by Mackenzie at Vizagapatam was equipped with a vacuum pan, as was the larger installation of Binny and Company at Ganjam, the latter an investment of £16,000 to £18,000.⁹⁶ (For some indication of the extent of the installations in Madras province, see Appendix 4, Table 1).

The Production of Industrialised Sugar from Crushed Cane.

The discussion in this section examines the small sugar plantation sector, which grew and processed cane using industrial technology in their sugarhouses. There is with such a discussion a problem of definition arises, that is to say, what is a planter or a sugar plantation in mid nineteenth century British India? The district reports of British India and parliamentary papers of the period, suggest those who grew commercial crops of sugar cane and processed it into sugar were known as planters, the land on which they grew this crop was called their plantation. In chapter six (below) it will be shown that the mode of agriculture and of land ownership in India was entirely different from the plantation industry of other colonies, there were also differences between Bengal and Madras. The nineteenth century sugar plantation, however, as perceived by nineteenth century Europeans, was a system in which slaves, or from 1834 indentured servants, on land owned by the planter, grew, cut, crushed and

⁹⁵ Sir George Watt, *Economic Products*, (1908) p. 928. The sugar palm in Madras province is *Borassus flabellifer*, also known in Madras and Bombay as the Palmyra palm or Brab tree.

extracted the juice from cane, and processed it through a plantation sugarhouse into crystallised muscovado sugar. The by-products of this process, molasses, were then distilled to rum and most of the products of the plantations were then sent to Europe or consumed by ethnic Europeans in North America. Some of this was also true of the sub-continent, but there were also significant variants on the above model. Nevertheless, where the term planter or plantation occurs it usually refers to those who were involved in growing commercial quantities of cane or purchasing cut cane to crush and process it into industrialised sugar adjacent to where the cane was grown.

The production of industrialised sugar utilising cane grown in this manner and crushed by horizontal steam powered mills began in the sub-continent around 1828. Two individuals have some claim as pioneer of this sector; one was C. H. Blake,⁹⁷ the founder of the Dhobah Sugar Company at Burdwan. He was highly thought of in Calcutta. In 1846, it was said that he deserved to receive an award for his pioneering work.⁹⁸ Another claimant to this title is a Bengali entrepreneur Dwarkanath Tagore. The latter installed Steam engines and an industrialised sugarhouse at Barriepore in the Twenty-four Pargannahs where he employed T. F. Henley to supervise operations.⁹⁹ This project failed. Tagore, however, persisted and went on to establish two other plants on his zamindari properties at

⁹⁶ *Select Committee Sugar and Coffee*, Third Report, pp. 164-5, Evidence of W. Scott, senior partner Binny and Company Madras.

⁹⁷ S. H. Robinson (1849), p. 105

⁹⁸ Anonymous, *Calcutta Review* Vol., IV, July-December (1846), pp. 421. Colonel Sleeman called Blake "Father of the Bengal sugar industry" and proposed that the Calcutta Agricultural Society award him a gold medal for his contribution to the sugar industry in India. Blake returned to England and formed the Dhobah sugar company as a joint stock Company. He sold the company for Rs.450, 000 retaining 300 shares.

Gazepore in Banaras and Syllidah in the Pabna district. S. F. Rice, an experienced West Indian, was the manager of operations. Both factories used horizontal crushing mills to process otahieti cane, which, was grown by the *ryots* and financed with cash crop advances. They both encountered difficulties with zamindari cultivation (Chapter 6 below). By 1838, however, only the Syllidah factory continued in operation.¹⁰⁰

The sector of the industry growing and crushing cane was most widespread in the districts of Tirhut and Champaran, but some of these factories also manufactured industrial sugar from indigenous raw sugar. Indigo planters in Tirhut and in the adjacent Champaran were drawn into sugar production in 1842-3.¹⁰¹ Reports of a poor cane harvest in the British West Indies, the high sugar prices in London of around £38 per ton exclusive of duty¹⁰² and the profits made by sugar factories already established in Bengal, were probably a crucial influence.¹⁰³ Not all of these establishments processed cane grown on their own leases; some had out-stations, which suggests they purchased *gur* or *rab* (a semi liquid raw sugar) from the cultivator-manufacturers and processed into muscovado along with the cane juice crushed at their own plantation.¹⁰⁴ The Tirhut phase would prove to be the most short-lived section of the industry and a costly failure for its investors (Chapter 6 below).

In this chapter technology and the scale of investment have been the subject matter, in the subsequent chapter the discussion will be of problems

⁹⁹ Blair B. Kling, *Partner in Empire*, (Calcutta, 1981), p. 88.

¹⁰⁰ *Ibid.*

¹⁰¹ *Parliamentary Debates*, Volume LXXVI, (1844), pp. 30-31 John Gladstone told the House that in 1845 some 2,000 tons of sugar had been sent home from Tirhoot (Tirhut), an area that had not previously produced sugar. He also predicted that in four to five years the region would produce 30,000 tons per year.

¹⁰² *Select Committee Sugar and Coffee*, First Report, p.99, Evidence of H. M. Kemshead.

¹⁰³ *Ibid.* The Dhobah Sugar Company made a profit of £23,000 in 1839 and £36,000 in 1840.

¹⁰⁴ A. Wyatt *Statistic of Sarun* (1854).

encountered in the sub-continent, with particular reference to agricultural, operational, economic and logistical factors. A discussion which will help to illustrate that the gradual equalisation of duties on all sugar entering the British home market between 1846 and 1854, although of great importance, was by no means the only reason for the failure of this industry.

Chapter 6.

Industrialised Sugar Production in British India 1829-1850: Agricultural, Economic and Logistical Barriers.

In the previous chapter the discussion was of the capital invested in technology and infrastructure in the Indian sub-continent 1836 to 1853. This investment created an industry with the potential to replace the British West Indies as the "British sugar bowl." With this technology entrepreneurs believed they could operate an industry producing industrialised sugar for export in Bengal and Madras. Events, however, would prove this technology and infrastructure unequal to the task and unable to overcome the plethora of difficulties encountered in the sub-continent.

The argument pursued in the two previous chapters, will be elaborated upon, that is to say, the centrality of the developments in the sub-continent to the overall story of East India sugar. In order to explain the full range of problems encountered, the discussion will be of agronomy, costs and availability of raw materials and the logistical, financial and economic problems of Europeans seeking to grow and process cane to make industrial sugar, or those purchasing raw sugar to process into industrialised sugar for export.

It will be argued that the entrepreneurs seeking to grow cane to feed steam powered crushing mills and modern plantation sugarhouses in Bengal, met with the *zamindari* system of land holding and cultivation. This mode of cultivation complete with peasant cultivators and their traditional mores, proved to be neither adequate nor cost effective. In addition to the problems with cultivators and leases, were difficulties with regard to the yields of sugar from indigenous and exotic canes in the sub-continent, in that they were substantially lower than in many other cane producing regions.

It will also be shown that factories purchasing and processing indigenous raw sugar encountered serious competition from the long established indigenous sugar merchants. The sub-continent was, in effect, a highly competitive market place with alternative outlets for the raw material sought by the makers of industrial sugar: markets in Bengal, central western India and on the caravan routes through Persia and Afghanistan. This competition ensured a steady increase in the cost of raw sugar 1836 through to 1847, and served to erode the profits of the industrialised sugar factories. The high sugar prices in Britain until late 1847 ensured a reasonable level of profitability. However, several factors were responsible for a sudden and sustained fall in the price of sugar, chief of which was the Sugar Act of 1846, which brought gradual equalisation of all sugar duties in Britain between 1846 and 1854.

An additional problem came from an increase in maritime freight costs, particularly in 1847, and the high cost of internal transport between factories and plantations and the exit port of Calcutta. There were also problems with regard to the efficient use of sugar by-products in Bengal, where molasses were not fully recycled or effectively merchandised; their efficient use or disposal was and still is, vital to the profitable operation of a plantation sugarhouse or industrialised sugar factory. These problems were compounded, when in late 1847 a financial crisis affected trade. Bengal was particularly hard hit and the sugar industry, already suffering from depressed prices, foundered amid a chronic shortage of working capital.

The European Planter and *Zamindari* Cultivation.

As has already been explained, there was a considerable difference between sugar planters and plantations in the West Indian sense and the definition of planter and plantation in the sub-continent. This difference was that a

planter in the West Indies was invariably the owner-occupier of his plantation employing either wage or slave labour. While those designated planters in India, held a form of lease on the land, usually employing cultivators who permanently occupied and cultivated this land, this difference should be kept in mind in the ensuing discussion of commercial cane crops and plantation sugarhouses.

In Bengal and Bihar, sugar planters leased land from *zamindars*, the only exception to this appear to be a few planters in the NWP, in Gorakhpur¹ and Deyrah Dhoon,². The *Zamindar* had a measure of control over this land and he was responsible to the government for the payment of land revenue. Leases acquired from traditional titleholders did not give European commercial cane planters freehold title or unrestricted use of the land. Instead, the planter had to reconcile the growth of commercial sugar crops with the fact that peasant cultivators also occupied and cultivated this land. The planter had a measure of control over land usage, but not vacant possession.³ Such a system tended to create a conflict of interest between the planter and peasant cultivators. The imperative of the European planter was to grow commercial plantation crops such as sugar or indigo, while that of the peasant cultivator was the cultivation of subsistence crops for familial survival, such as legumes, groundnut and grains.⁴

From the *ryots* perspective, sugar cane was an expensive crop to cultivate requiring extensive labour resources; but cash and labour were seldom readily available. Therefore the extent of cane crops was limited, governed entirely by

¹ *Select Committee of the House of Lords Appointed to Consider of the Petition of the East India Company for Relief*, (1840) p. 70

² P. P 1859, Volume XXXIII, Land Settlement Europeans Deyrah Dhoon, p. 272 and 274 to 367 passim.

³ Burton Stein (ed.), *The Making of Agrarian Policies in British India 1770-1920*, (New Delhi, 1992) p. 1-31 passim. The various models of land revenue systems in India and many aspects of agrarian policy of the British Indian administration are explained in the introduction and in subsequent articles in this publication.

⁴ Peter Robb, "Law and Agrarian Society in India: The case of Bihar and the Nineteenth century Tenancy Debate," *Modern Asian Studies*, 22, 2 (1988), pp. 319-354. pp. 336-340. The interrelationships in the Indian village community and the role of credit and debt in village society are explained. Commercialisation of agriculture did not open up new markets or opportunities for cultivators; instead they tended to tie the ryot to an agent dealing in a specific commercial crop.

the availability of family labour. Shahid Amin, discussing peasant cultivators in Uttar Pradesh, explains: "Of all his various crops, sugarcane demands the most time, and attention. The crop occupies the land for ten months or so, and the manufacture of *gur* engaged the peasant for another ten to twelve weeks" In an attempt to emphasise the ryot's labour difficulties he quotes an old Bengali poem; "unless a man has seven sons and twelve grandsons he should not cultivate sugarcane".⁵ Clearly, cane cultivation and the processing of juice to *gur* occupied both cultivator and land for nearly a year, on the other hand, a crop of rice took three months from ploughing to harvest plus a few weeks to cut and thresh."⁶ It also left the ground available for an additional crop each year. Sugar, a labour and capital-intensive crop,⁷ offered returns little better than other crops, as a high cost crop it carried the risk of debt bondage in the event of crop failure, and limited the cultivators' cropping options.⁸ Consequently the small cultivator was seldom a willing participator in commercial cane cultivation; when he grew cane to supply sugar for the regional or wider market, coercion was usually involved. This took several forms: debt bondage, honouring traditional ties with the local *zamindar* or a degree of coercion from European planters, particularly if the later had paid additional fees to the *zamindar* to acquire the *taloks*, (a measure of control of crops planted by the *ryots*). The influence of the *zamindar* was strong, for although a European planter could come to an agreement directly with a village

⁵ Shahid Amin, *Gorakhpur*, (1984) p. 42.

⁶ N. K. Sinha, *Economic History of Bengal Vol.*, 3 (1970) pp. 290-292.

⁷ Robert Montgomery, *Statistical Report of the District of Cawnpore, June 1848*, (Calcutta, 1849). p. 22. The cost per bigah for sugar was Rs. 15.8, with a gross return of about Rs. 24.8. The average ryot, however, grew only .33 of a bigah; it is almost impossible to cost such small-scale husbandry.

⁸ Leonard Wray, (1848), p. 148. In an attempt to describe the hardships endured by the ryot, Wray commented: "Thus we find the natives cultivating their fields, and a few days later, (often the same day) we see them busily engaged in some other occupation. Which brings them in a few pence and that alone enables them to bear up against oppressive rents, low markets, grinding usurers, and other ills that very numerous beset them." See also H. R. Ghosal, *Economic Transition in the Bengal Presidency 1793-1833*, (Calcutta, 1966). P. 60

headman, the *zamindar* could intervene. Leonard Wray explained this to the Select Committee, "He had not heard of any instance of this, the usual method was through the *zamindar*, and then a "douche" in cash was required."⁹

For the peasant cultivator the reward from cane cultivation was not commensurate with effort, even in the event of a good cane harvest, and particularly when the cultivator was beholden to his creditors through cash crop advances. Arthur Crooke, although critical of *ryot* husbandry, explained to the Select Committee, that when harvests were good middlemen purchasing *gur* for the regional market or for the industrialised sugar industry, invariably paid the cultivator less per maund than when *gur* production was low and all of it was sold locally.¹⁰

This combination of European planter and peasant cane cultivator was not successful for either party. C. H. Blake, the founder of the Dhobah sugar company (Chapter 5 above), experienced difficulties with the *zamindari* system as he sought to operate steam powered crushing mills. T. S. Robinson (a leading participant in the mid nineteenth century Indian sugar industry) believed that Blake used a system of payment similar to agreements between indigo growers and the factory.¹¹ This was most probably the *bhaoli* system, common in southern Bihar; such agreements saw the crop divided equally between the rent payer and the rent receiver after it was harvested, this invariably left the cultivator short of disposable income between planting and harvest.¹² Cane grown under these agreements were usually on small scattered plots, this did not allow Blake to

⁹Ibid, p. 155.

¹⁰Select Committee Sugar and Coffee, First Report, p. 19.

¹¹ T. S. Robinson, (1849), p. 105.

¹² Colin F. Fisher, "Planters and Peasants: The Ecological Context of the Agrarian Unrest on the Indigo Plantations of North Bihar, 1820-1920." pp.114-149, in Clive Dewey and A. G. Hopkins Eds. *The Imperial Impact: Studies in the Economic History of Africa and India*, (London, 1978), p. 116

secure sufficient cane each day to keep his steam mills in continuous operation, and some cane juice was lost through drying, due to a long time lag between cutting and crushing. Consequently, he turned to the purchase of raw *gur* either direct from cultivators or through middlemen.

T. F. Henley the manager of Dwarkanath Tagore's plantation at Barriepore also encountered problems with cane cultivation. He planted 600 bigahs with otahieti and indigenous canes, but the land turned out to be of low productivity,¹³ possibly through salinity.¹⁴ The sugar produced was of such poor quality it could not be sold for more than Rs.3 to 4 per maund in Calcutta, far below cost.¹⁵ After two poor seasons at Barriepore, Henley visited Mauritius to familiarise himself with the islands' sugar industry. On his return to the sub-continent, a third attempt was made at Barriepore, this also failed; the whole venture cost Dwarkanath Tagore Rs. 200,000.¹⁶ After losses of this magnitude, it is difficult to explain why Tagore continued to invest in the production of industrialised sugar. Perhaps he believed it could be done profitably through investments in conjunction with his large *zamindaris* in the sugar growing districts of Ghazipur near Banaras and in Pabna near Syllidah. The combination of *zamindari* system and European sugar technology brought similar problems to those encountered by Blake. After three years milling operations ceased, and *gur* was instead purchased from the *ryots*. Sugar processed from *gur* was actually only twenty-five percent of the cost of that produced from cane crushed by modern steam powered rollers.¹⁷ The most significant feature of Tagore's failure, however, was that the last two operations were carried on in conjunction with his *zamindaris*. As a rich and powerful

¹³ Blair B. Kling, *Partner*, (1981), p.88.

¹⁴ Charles C. Lock et al, (London, 1882). pp. 24-25.

¹⁵ Blair B. Kling (1981) p. 106.

¹⁶ *Ibid*, p. 88.

indigenous titleholder, it was not unreasonable to expect him have a greater measure of control or coercion over the *ryots* than Europeans on *zamindari* leases. This does not appear to have been the case: he too was unable to persuade them to cultivate larger plots of cane or grow the cane on land adjacent to his factories.¹⁸ If Dwarkanath Tagore could not profitably operate a plantation closely integrated with *zamindari* agriculture, then European planters, lacking either his influence or coercive power, had less chance of success.

The most widespread attempt to establish European sugar plantations occurred in the districts of Tirhut and Champaran where there were 86 plantations during the second half of the 1840s (chapter 5 above). Here European planters, predominantly indigo growers,¹⁹ attempted to combine sugar cane and indigo cultivation, two crops to some extent complimentary. Indigo harvesting and processing began in June,²⁰ cane cutting and processing from January to the end of March.²¹ Some of these plantations also processed locally grown *gur*; a report of 1854, indicates that many of these factories had out-stations to purchase raw sugar from other planters or local *ryots*.²²

Although the failure of the Tirhut planters was quite spectacular, as we shall see below, they were, perhaps, unfortunate to encounter a series of climatic problems during the first four years of this venture, although such problems were

¹⁷ Ibid, pp. 88-9.

¹⁸ Ralph Shlomowitz, "Plantations and Smallholdings: Comparative Perspectives from the World Cotton and Sugar Cane Economies, 1865-1936." pp. 1-16 *Agricultural History Vol.*, 58, No. 1 January 1984. p. 2. The trend in sugar cane production post 1865 was toward large-scale production, especially for producers such as Cuba, Java, The Philippines, Puerto Rico, Java and Hawaii.

¹⁹ A. Wyatt, *District of Tirhoot*, (Calcutta, 1848) pp. 58-9 Appendix B. This report indicates that the 28 sugar concerns were all indigo and sugar factories with steam engines. A Wyatt Statistics of the District of Sarun Consisting of Circars Sarun and Champaran, (Calcutta, 1854) p. 3. In this report nine indigo and sugar factories equipped with steam engines are mentioned.

²⁰ Colin M. Fisher, "Planters and Peasants." (1978), p. 120. And *Select Committee Sugar and Coffee First Report* p. 182, Evidence of Nathaniel Alexander, East India merchant.

²¹ Ibid, Evidence of John Bagshaw MP, p. 32; the witness reported on a lengthy conversation on the utility of growing sugar in rotation with indigo with Mr A Nowell, an indigo planter of Tirhut

not without precedent.²³ The first year was one of widespread drought; the following year the inundation was said to be "unusually severe and cane in some regions was flooded for several weeks."²⁴ Exotic canes, unlike some native varieties, do not tolerate flooding, consequently much of the cane died. Termites also proved a problem, particularly among the softer exotic canes. Infestation tended to be greater on land that had been recently reclaimed from waste, although areas under cultivation also suffered infestation from termites and rats. The traditional separation of family plots by narrow strips of uncultivated land was apparently a breeding ground for these pests.²⁵

Among the reasons contributing to their failure, planters cited soil salinity and the tendency of otahieti and other exotic canes to yield poorly in India after two or three years.²⁶ This group also complained loudly about the poor husbandry standards of the *ryots* contracted to grow their cane,²⁷ as did Arthur Crooke who had a plantation at Jummoa adjacent to Tirhut,^{28,29} Leonard Wray³⁰

²² A. Wyatt, *Statistic of Sarun*, (1854).

²³ R. B. T. S Venkatraman and Syed Abbas Hussainy, "Sugarcane Varietal Trials for Selecting Improved Types," pp. 1-15 *Indian Journal of Agriculture* Vol., 3 (1935). p. 7. Statistics collated during the late 1920s and early 1930s indicate that conditions of both rainfall and temperature at an optimum for cane growth occur only one year in five. The occurrence of drought and inundation are well documented in district records written before 1840, information available to the Tirhut planters. See for example, Robert Montgomery, *Statistical Report of the District of Cawnpore* (Calcutta, 1849), pp. 8-9. There are reports in this document of what are called devastating droughts in 1804 and 1834-35, with another significant drought during the 1837-8 season. There was also drought and famine in North-west India in 1836-7.

²⁴ S. H. Robinson, (1849), p. 108.

²⁵ *Ibid.* p. 120.

²⁶ Walter J. Leather, "Sugarcane in India" pp. 255-266 *The Agricultural Journal of India*, Vol. 4, (Calcutta, 1911), p. 262-3. Variation of soil types and minor variations in climate within the same district cause fluctuations in cane growth, juice richness and the yield of raw sugar. Indigenous canes planted a few just kilometres from where they have become acclimatised, often gave lower yields. The planters may well have been correct to equate poor husbandry with the deteriorating yields, but good husbandry on soils unsuitable for the specific cane variety did not necessarily produce good yields.

²⁷ *Ibid.* p. 15.

²⁸ *Select Committee Sugar and Coffee*, First Report, Evidence of A Crooke, p. 15.

²⁹ Leonard Wray, (1848), p. 158. Wray obtained use of the land in early March, after the *ryots* harvested their crops of wheat, barley, rice and legumes. The land was then prepared and planted with cane by early April; the cane was then cut November to January. After one crop of cane the land was returned to the *ryot*.

³⁰ *Select Committee Sugar and Coffee* First Report, pp. 48-9.

and S. H. Robinson,³¹ also told how the *ryots* “ fell into wasteful traditional habits” unless continually supervised by Europeans.³²

Of those who gave evidence before the *Select Committee*, only Leonard Wray spoke of the poor correlation between effort and monetary returns to peasant cane cultivators. Nor did the witnesses give any credence to the peasant's extensive knowledge of cane agriculture. Instead they complained about traditional methods of cultivation, the peasant's attachment to certain indigenous cane varieties and insistence on planting a mixture of cane varieties.³³ The *ryots*, however, were practising survival agriculture, they planted canes inured to the sub-continent's climate, and by so doing obtained a measure of immunity from total crop loss through periodic droughts or the annual inundation.³⁴

The sugar industry in Madras suffered some problems similar to those in Bengal. In North and South Arcot difficulties of small and scattered cane plots made continuous operation of steam crushing mills difficult.³⁵ During much of the 1840s cane cultivation in these two areas also incurred high land taxes,³⁶ the land settlement was annual and based on the value of the crops. Along the Godavery River delta and around Ganjam, the *ryotwari* settlement was subject to agreements reached between the cultivator and the *zamindar*, as a consequently

³¹ S. H. Robinson, (1849), pp.109-110.

³² *Ibid*, p. 110. Many planters leased whole villages from zamindars and paid considerable sums for the right to obtain the Taloks (the use of land at their own preference, with a provision that they paid a “fair rent” to the cultivators).

³³ Clive Dewey, “Images of the Village Community: A Survey of Anglo-Indian Ideology,” *Modern Asian Studies*, 5, 3 (1972) pp. 291-328. p. 305 The Utilitarian view that Indian village society was a stagnating influence preventing the emergence of a modern economic system was at its peak circa 1850.

³⁴For an explanation of localised diversity of indigenous canes see: H. H. Ghosh, *Sugar in India*, (1938), *passim*.

³⁵ *Select Committee Sugar and Coffee*, Third Report, p. 31, Evidence of John Utlay Ellis.

³⁶ R. A. Washbrook, *The Emergence of Provincial Politics: The Madras Presidency 1870-1920*, pp23-34. From the 1830s, the NWP and much of Madras had 30-year settlements. The object was to encourage *Zamindars* and their tenants to grow the most valuable crops. .

of this they ryot suffered less oppression.³⁷ The *ryotwari* system of land tenure was common to much cultivated land in Madras, a system that to some extent reduced the *zamindars'* capacity to blatantly exploit the *ryot*, it was more closely linked with peasant rights and traditions than the *zamindari* system in much of Bengal.³⁸

In North and South Arcot during the 1840s, however, the annual assessment of revenue represented a considerable proportion of production costs. Rent on land growing cane was £2 per hectare, with a yield of exportable muscovado at 1.69-2.2 tons per hectare.³⁹ Land revenue cost 90 pence to £1.18 or some 5 to 6 percent of the value of muscovado at £20 per ton free on board. The land revenue charges and the intensive nature of cane cultivation made cane an unpopular crop among local cultivators. Rice, groundnut and leguminous crops needed less labour and offered equal or better returns, as they did in Bengal.⁴⁰ A. F. Arbuthnot for example, complained that his agents were unable to persuade the *ryots* to sell raw sugar at lower prices.⁴¹ Parry and Company, with long experience of dealing with cultivators, had similar problems; their agents at Palghat and Tinnevely were able buy large quantities of palm *jaggery*, but could

³⁷ Select Committee sugar and Coffee, first report, p. 125, Evidence of F. W. Prideaux, Examiner of East India Correspondence.

³⁸ See N. Mukherjee and R. E. Frykenberg, "The Ryotwari System and Social Organisations in the Madras Province," in Frykenberg, (ed.), *Land Control and Social Structure in Indian History*, (Madison, 1969), p. 220. William J. Barber, *British Economic Thought and India 1600-1850*, (Oxford, 1975), p. 169. The Permanent Settlement had increased the burden of taxation by 1831-2, whereas the Madras Ryotwari system, which was supposedly linked to the crop yield of the land, had not.

³⁹ *Select Committee Sugar and Coffee*, Third Report, pp. 30-32, Evidence of J. U. Ellis.

⁴⁰ A. Sarada Raju, *Economic Conditions in the Madras Presidency 1800-1850*, (Madras, 1941) pp. 82-3. Hilton Brown (1954) p. 86. *Select Committee Sugar and Coffee*, Third Report, pp. 31-32, Evidence of J. U. Ellis. Ellis and other witnesses' spoke of the high cost of government revenue on land growing sugar was a strong disincentive to its cultivation.

⁴¹ *Ibid*, First Report, p. 190, Evidence of A. F. Arbuthnot.

not induce the *ryots* to increase cane cultivation. They, too, were told that groundnut and other crops needed less labour and produced better returns.⁴²

The weight of evidence overwhelmingly indicates that the *zamindari* and to a lesser degree the *ryotwari* system of agriculture was not viable when it was called upon to supply cane to steam driven cane crushing technology or modern sugarhouses. Leonard Wray believed that only a full-scale, self-contained plantation equipped with an irrigation system, high quality work animals and hired wage labour, offered any real prospect of long-term viability in northeast India.⁴³

Problems associated with the *zamindari* leases in Bengal or *ryotwari* leases in Madras, were almost certainly behind a discussion about labour methods and the growing of cane for the industrialised sugar factories of the sub-continent at the Select Committee of 1847-48. These discussions were primarily of the "Cultivation System" in the Dutch East Indies specifically in Java.⁴⁴ Here European sugar manufactures received loans for infrastructure, equipment and working capital to establish a modern sugar processing industry. These establishments were fed with cane grown on village land under the supervision of headmen and colonial officials.⁴⁵ It is possible that private talks between some witnesses and committee members prior to or during the sitting of the Select Committee prompted this discussion. These conversations may have touched on the possibilities of operating some form of coercive labour system in Bengal. It

⁴² Hilton Brown, *Parry's*, (1954) p. 86.

⁴³ Leonard Wray, (1848) pp. 192-3.

⁴⁴ *Select Committee Sugar and Coffee* First Report, Evidence of L. Wray pp. 48-49, and Fifth Report, pp. 108-110, Evidence of John Crawford, Historian and diplomat, pp. 196-199, Ibid, Evidence of E. St. Martin, Dutch businessman with Java connections, pp. 105 to 116, also Third Report, Evidence of W. Dennison, sugar planter Java. pp. 32-45.

⁴⁵ G. R. Knight, *Colonial Production in Provincial Java: the Sugar Industry in Pekalongan-Tegal, 1800-1942*. (Amsterdam, 1993) p.2 See also: Setrisno Loekman, "The Sugar Industry and Rural Development: The Impact of Cane Cultivation for Export on Rural Java: 1830-1934". PhD Dissertation (Michigan 1988), chapter three passim and R.E Elson, *Village Java Under the Cultivation System 1830-1870*, (Sydney, 1994) Chapter 3 passim.

may be speculated that such discussions were encouraged by the resumption of the recruitment of Indian workers, the so-called hill coolies, who were sent from Bengal and Madras to work in the sugar industry of Mauritius. Such workers had the right to return to the sub-continent after an agreed period of wage labour. Coercive labour short of slavery was not out of place in the middle of the nineteenth century, it was the rule rather than the exception, especially when peasants were reluctant to grow labour intensive commercial crops for European planters.⁴⁶

Three witnesses were called to give evidence with regard to Java. The first, Mr Eves St Martin was a member of a Dutch merchant family with long involvement in the trade between Holland and the Dutch East Indies. He told the Committee that the peasant in Java was not "compelled to work for private individuals, but those that do are paid at a rate set by the government." Should the peasant refuse to work for the government he will be "driven away from his village."⁴⁷ When asked if the system was analogous with slavery, as he understood it, he replied "Not the least."⁴⁸ John Crawford diplomat and historian, was unequivocal on "cultivation system". He explained that Java had a large and rapidly growing population to feed on which the Dutch had forcibly superimposed an export sugar industry. This industry occupied the best land, the fertile irrigated rice paddy. He was also critical of the high levels of land tax imposed by the Dutch East Indies government. With regard to E. St Martin's claim that private growers were not as intrusive as the government system, he was adamant, "There is not a straw between them." He refused to accept any differentiation and

⁴⁶Emmanuel Wallerstein, "The Great Expansion: The Incorporation of New Zones into the Capitalist World Economy, c 170-1850, *Studies in History*, Vol. 1 Nos. 1&2 (January-December, 1988) pp. 85-156 p. 119.

⁴⁷ *Select Committee Sugar and Coffee*, Second Report p. 111.

said, "So far as Government sugar, which is the main part of the production, goes, it is produced by a species of forced labour." His criticisms were so harsh; that the chairman encapsulated them in a brief summing up of his evidence to that point: "The population is dense, the [land] rent high, and the labour forced." Crawford replied, "They are so."

Mr William Dennison, a sugar planter with twenty years experience in Java, was asked the same question as Martin with regard to whether the labour was forced or free. He chose to avoid a direct answer, reading instead a long statement, in which he attempted to show continuity between the earlier period of British occupation and "the cultivation system". He attempted to do this by alluding to the descriptions of the land tax system operating in Java as described by Sir T. S Raffles in his *History of Java*, (London, 1817) and John Crawford's *History of the Indian Archipelago*, (London, 1820).⁴⁹ The Select Committee heard a considerable amount of evidence with regard to Java and the "cultivation system."⁵⁰ The final report, however, did not address the culture of sugar cane in of Java, it had much to say about schemes to promote the immigration of free black workers to bolster the labour force in the British West Indies,⁵¹ and suggestions on extending the indenture labour system, contracting "hill Coolies" from Bengal and Madras to work in the sugar industry of Mauritius⁵² The introduction of any form of coercive labour or changes to the agricultural system of British India, were conspicuous by their absence.

⁴⁸ *Ibid*, p. 112.

⁴⁹ *Ibid*, Third Report pp. 32-33.

⁵⁰ *Ibid*, Seventh Report Appendix 7 A. This appendix is a summation of a lengthy report submitted by the Commissary General of the Dutch East Indies Van den Bouch, which amongst other things explained the system of forced cultivation to 1806, land tax and cultivation system 1806 to 1834.

⁵¹ *Ibid*, Eight Report pp. X to XIII passim.

⁵² *ibid*, pp. XI- XIV.

Slavery had been an issue, which occupied the consciences of the British people for half a century; and in the 1840s in India, it was an issue that had not been entirely resolved.⁵³ If indeed, commercially viable sugar plantations were to be set up in the more productive sugar growing regions of Northeast India, then the planter community probably envisaged a process similar to the "cultivation system" of Java, or perhaps the more extreme measure of the removal of the resident cultivators from their land. This would give the planter free hold, or a greater measure of land use. Such actions, however, would almost certainly have led to civil disturbances. In any event, the close correlation between sugar and slavery would ensure that any dispossessions and civil disturbances caused by the formation of commercial sugar plantations in India would be met with anger and hostility in Britain. Consequently, any overt coercion imposed on Indian agriculturalists was unlikely to obtain the approval of the government in British India or the British parliament. Coercive methods associated with commercial agriculture were already creating problems in the sub-continent, such as conflict between the *ryots* and indigo planters. Later in the nineteenth century, the Assam tea industry would also extensively exploit Indian labour.⁵⁴

In Chapter 4 above, it was argued that the land and economic policies of the government of Bengal discouraged the establishment of a sugar planting

⁵³ P. P. 1841, 28, (328), *Papers Representing Slavery in the East Indies*, offer a good description of the British understanding of the operation of slavery in India. Howard Temperley, *British Slavery, 1833-1870*, (London, 1972), pp.93-97 passim. British slave abolitionists were active in seeking legislation to abolish all forms of slavery in India, particularly during the 1830's. p. 107 Lord Ellenborough pushed through another bill to further tighten anti-slavery laws in India in 1843. James Walvin *Black Ivory*, (London, 1992), p. 311 British abolitionists were well aware of the nature of slavery in India through debt bondage and forms of domestic slavery.

⁵⁴For the exploitative nature of indigo European planters see: B. B. Kling, *The Blue Mutiny*, (Philadelphia, 1966), C. M. Fisher, "Planters and Peasants: The Ecological Context of the Agrarian Unrest on the Indigo Plantations of North Bihar, 1820-1920."pp. 114-131, in Clive Dewey and A. G. Hopkins (eds.), *The Imperial Impact: Studies in the Economic History of Africa and India*. (London, 1987). For the tea industry see W.H. Ukers, *All About Tea*, 2 vols. (New York, 1935) and Raymond K. Renford, *The Non-Official British in India to 1920*, (Delhi, 1987) chapter 2 passim.

industry. It is surely worth observing that had viable sugar plantations been established several decades earlier, many of the problems with husbandry and poor yields, may have been overcome by the 1840s. The question, however, of a fusion of British capitalism and "village agriculture" in India, to the mutual benefit of both parties, would remain unresolved. The sugar planters of the 1840s did not find a way of satisfactorily overcoming these problems. The debate on the origins, the historical values and policy with regard to landownership and use, as Clive Dewey explains, remained a subject of hot dispute throughout the nineteenth century.⁵⁵

Cane Sugar Yields.

As we have seen the commercial cane planters met with a variety of problems that made the economics of cultivation problematical. Quite apart from the alleged inadequacy of the husbandry of the *ryot*, they also had to contend with harsh climatic conditions, termites and other insect pests endemic in the sugar growing regions of Bengal and, to a lesser extent, in Madras.

Leonard Wray, who travelled extensively in the sugar producing regions of North-eastern India in the 1840s, estimated the average yield of export quality muscovado from indigenous canes to be "0.6 to 1 ton per hectare in Bengal."⁵⁶ Arthur Crooke suggested a slightly lower figure of "0.5 tons".⁵⁷ These figures are borne out by other data, which also indicates sugar yields in the sub-continent was low throughout the nineteenth century. Muscovado yields were 0.64 to 1.40 tons per hectare and fine sugar 0.3 to 1.82 tons per hectare (Appendix 1, Table 32).

In a comparison with some tropical regions, which had moist and well-manured soils, Leonard Wray pointed out that red striped or white otahieti canes

⁵⁵ Clive Dewey, "Images" *Modern Asian Studies*, 6, 3 (1972), pp. 291-328, passim.

⁵⁶ *Select Committee Sugar and Coffee*, First report, p. 48, Evidence of L. Wray.

or the purple canes of southeast Asia, yielded around 5 tons per hectare;⁵⁸ considerably higher than those of northeast India. He believed that the primary cause for this was that commercial sugar crops were usually grown on village land, e.g. on *zamindari* leases. This land was under constant cultivation, and consequently low in nutrients. Liberal applications of manure would have overcome this, but manure was usually in short supply, it was frequently used as fuel for cooking in many of the drier areas where firewood was scarce. He suggested the low nutrient problem could be overcome through deeper ploughing to turn up the nutrient rich sub-soil, untilled by the shallow digging ploughs common to the sub-continent. These ploughs could be imported, but the cattle in many of the sugar growing regions, were under-fed and too weak to pull them.⁵⁹ Wray's suggestion, however, did not present a long-term solution, since without the addition of nutrients the deep ploughed soil would also become exhausted.

To the planters of the Tirhut region, exotic canes seemed to be the answer to lower yielding native varieties. From 1841 Europeans began to plant some otahieti, the introduction of these, however, was not conducted in a planned or professional manner. Instead of gradual introduction over a several seasons, during which these canes had time to acclimatise and possibly develop some resistance to insect infestation or disease, the trial period prior was just one year. The planters sought to exploit the lucrative British sugar market in the shortest possible time.

The best known of these trials was at an indigo factory at *Bungong* on a plot of some 12 hectares, a very fertile piece of land where indigo *seeth* (refuse)

⁵⁷ *Ibid*, First Report, p. 13, Evidence of A. Crooke.

⁵⁸ L. Wray (1848), p.4.

⁵⁹ *Ibid*, p. 155.

was burned annually. The planters manured, irrigated and lavished a high standard of husbandry on this small area, and met with some success, 4.91 tons per hectare of muscovado in its first year.⁶⁰ The actual yield from otahieti of muscovado sugar 1840 to 1847, was 1 to 1.3 tons in Bengal and a mere 0.9 per hectare in Tirhut.⁶¹ Poor yields and low returns on capital were something the Tirhut planters could not sustain; they had invested a great deal of money borrowed at interest to provide working capital. Their operations were in an early developmental stage, they had sunk capital borrowed at interest to pay *zamindari* leases, and cash crop advances to cultivators, payment of agents' fees, as well investments in buildings and machinery.⁶² They also paid interest on monies advanced to cultivators up to a year before the crop was processed into sugar, and did not receive full return on capital until the sugar was sold in Britain and the bills of the hypothecated sugar returned to Calcutta (below).⁶³ The sugar they did produce was poor in quality, and deteriorated during the voyage to Britain, as did all damp sugar. Merchants in Calcutta said, "It was weaker [had less crystallisable sugar content] than native sugar of similar refinement [sic]."⁶⁴

That the sugar yield per hectare in British India was poor can be born out by a comparison with contemporary sugar yields in other Asian regions. For example, H. Hunter, a Mauritius planter with six sugar estates, claimed production figures of 3.7 to 4.9 tons of good muscovado per hectare. Ratoons, however,

⁶⁰ S. H. Robinson, (1849), p. 110, and, *Select Committee Sugar and Coffee*, (1847-8) First Report, Evidence of Arthur Crooke, p. 18. Crooke mentions this same crop of otahieti.

⁶¹ *Select Committee Sugar and Coffee*, First Report, p. 24, Evidence of A. Crooke.

⁶² S. H. Robinson, (1849), p. 107.

⁶³ *Select Committee Sugar and Coffee*, First Report, pp. 121-2, Evidence of Henry Tucker. Sugar and other commodities when hypothecated, were in effect, mortgaged to the Company for up to seventy-five percent of their market value.

⁶⁴ S. H. Robinson, (1849), p.108.

produced only 0.6 tons.⁶⁵⁶⁶ B. Chapman, the agent for an estate in Mauritius of over 243 hectares, indicated 3.1 to 3.5 tons per hectare.⁶⁷ In the tropical climate of the Straits Settlements and Java, the production figures were also higher. The ten estates in Province Wellesley on the mainland opposite Penang Island and two on Singapore Island produced an average of 5.5 tons per hectare.⁶⁸ In Java, 2.25 to 3.6 tons of muscovado per hectare were said to be commonplace in the 1840's.⁶⁹

Although the Tirhut planters complained of poor yields from otahieti and other exotic canes, and the poor husbandry of the *ryots*, evidence suggests that the introduction of new species of cane had a significant impact of sugar production and were accepted and grown successfully by the *ryots* in other sugar producing regions. At Jubbulpore, Rangpur, Dinajpur and Cawnpore for example, attempts to introduce exotic canes and encourage sugar making had a greater level of success. It may well be of some significance, that these were not entirely tied to the demands of European planters, or as intimately tied to the export market as those recorded by Wray, Crooke and Robinson. In fact, some were genuine attempts to improve the lot of indigenous cane cultivators and their sugar making techniques. Jubbulpore in the Nurbudda valley, although in Central India, offers us an example of joint European and Indian involvement in cane cultivation and sugar manufacture. Captain Sleeman, a senior government administrator in

⁶⁵ *Select Committee Sugar and Coffee* First Report p.233, Evidence of H. Hunter, planter Mauritius.

⁶⁶ P. D. Reeves, (ed.), *Sleeman in Oudh: An Abridgement of W. H. Sleeman's: A Journey Through the Kingdom of Oudh. in 1849-50*, (Cambridge, 1971). In his journal Sleeman, expresses the belief that as far as he is aware, only the Oudh region of Bharwara and in the district of Alleegunge could ratoons be successfully grown in the sub-continent. The sub-soil of this district remained damp throughout the dry season and thus prevented termite infestation and drying out of the roots. pp. 244.5.

⁶⁷ *Select Committee Sugar and Coffee*, Second Report p. 24, Evidence of B. Chapman, merchant Port Louis Mauritius.

⁶⁸ *Ibid*, First Report, p. 56, Evidence of Leonard Wray.

Jubbulpore until 1830 was instrumental in the introduction of exotic canes into the Nurbudda valley, 1827 to 1829.⁷⁰ He sought to improve the economic base of the local population through improved sugar production, to achieve this he encouraged indigenous *khand* makers to come from sugar manufacturing areas north of Ganges to teach the local *halwais* how to value-add *gur*.⁷¹ J. W. Payter,⁷² a planter of Rangpur and Dinajpur, who no doubt had some direct involvement in the export of sugar, also encouraged the cultivation of exotics by local peasant cultivators. In the early 1840s he ordered white and red striped otahieti cane setts from the gardens of the Calcutta Agricultural Society,⁷³ as did Major General Oglander a planter in the Cawnpore region.⁷⁴ The credit for this cooperation between British administrators and commercial cane growers and the indigenous sugar industry, properly belongs to these three individuals; government involvement was minimal.

Indigenous cultivators successfully grew introduced varieties without serious problems, for almost three decades. Reports suggest that the traditional practise of growing mixed varieties, in this case white and red striped otahieti

⁶⁹ *Ibid*, Third Report, p. 45, Evidence of W. Denison, sugar planter Java. In Java yields of muscovado sugar were said to be between 2.25 and 2.71 tons per hectare. *Ibid*, Fifth Report, p. 106. Evidence of Eves St. Martin, this witness put the yields of muscovado in Java at between 2.71 and 3.6 tons per hectare

⁷⁰ I. O. O.C. *Boards Collections 1834 1835 Vol. 1510*, Letter from Captain W Sleeman, Principal Assistant Agent for Governor General at Saugar, to F.C. Smith Governor Generals Agent Jubbulpore, 5 October 1832

⁷¹ P. D. Reeves, (ed.), *Sleeman in Oudh*, (1971). Sleeman had a very keen interest in most aspects of Indian agriculture. He writes frequent notes in his journal as he travels through Oudh on sugar cane, its uses and the variation in cane husbandry. p. 241, pp. 244-5 and passim.

⁷² W. Hunter, *A Statistical Account of Bengal Vol.3, Rajshahi and Bogra*, (London, 1876). This report refers to Payter introducing exotic canes on "his estates," indicating that he held title of some sort to agricultural land.

⁷³ *Ibid*, p.218.

⁷⁴ The Botanical Gardens in Calcutta and the gardens of the Agricultural Society both grew exotic canes, cuttings from which were sent to many places in Bengal. An example of this is seen in *Bengal Steam Proceedings*, 5 July 1838 No. 5 O.I.O.C. Major General Oglander offered his services to the Agricultural and Horticultural Society of Calcutta to distribute otahieti cane cuttings to cultivators in the Cawnpore district. These cuttings were sent via river steamer to Cawnpore, ensuring their freshness on arrival.

canes, possibly led to a dominant red sport susceptible to disease.⁷⁵ This could have been the cause in 1857-8 when disease, probably red rot,⁷⁶ wiped out exotic canes in many of the sugar growing districts.⁷⁷ When this occurred, local cultivators, concerned that the exotic canes would again fail, or lured by the easy availability of indigenous cane setts, returned to the indigenous varieties.⁷⁸

In some regions the introduction of exotics had positive results with regard to the economic welfare of cultivators, particularly where irrigation was abundant and cheap, and the standard of husbandry was above average. The better yields associated with exotic canes allowed cultivators to retain a measure of independence from *mahajins* or European merchants seeking sugar at minimum prices--a point strongly made by E Alexander, in his report on the Gorakhpur

⁷⁵ C. A Barber, "The Origin of New Sugarcanes by Bud Variation, *The Agricultural Journal of India* Vol. 1, (1906), pp. 285-289, p.287. Barber observes that sports with a common colour can occur over a period of time, particularly when different varieties are grown in close proximity. When this occurs, the colour is the major factor of change; characteristics such as growth and purity of juice remain as they were prior to the change in colour.

⁷⁶ E. C. Coles, "Insect Pests in India," *The Sugar Cane*, No. 243, Vol., XXI, (October 1889), pp. 597-60, p. 598. B. J. Mookerjee reported widespread devastation of red canes in Burdwan, Rungpore and Hooghly districts in the same season 1857-8. W. W. Hunter, *A Statistical Report of Bengal Vol. IV* (London, 1876) p. 391. Disease of this type occurred throughout this period. It was apparently common to see infected canes rotting in the fields. E. J. Butler "Fungal Diseases in Sugar Cane in Bengal," *Memoirs of the Department of Agriculture in India, Botanical Series*, Vol. 1 p. 1-47. (Calcutta, n/d.), p. 3. Butler found that in 96 percent of cases of Red Rot (Red Smut), the root borer *Polycha Sacharella* was also active. He did not believe the borer to be the primary cause of the disease. The most probable cause of such devastation in 1857-8 was red rot.

⁷⁷E. C. Coles, "Insect Pests." (1889) p. 589. Root borers in Burdwan, Rungpore and Hooghly attacked canes described as Bombay Red in the 1857-8 seasons. Total crop failure occurred amongst these canes, which, although possibly of Indian origin, were not native to the area. See also Sir George Watt, *Commercial Products*, (1908), p. 93 It is probable that these red canes were Red Bombay a red purple cane introduced to India from Singapore and the Malay Straits. G. C. Stevenson, *Genetics*, (1965), p. 60. It is possible that canes introduced in the period 1827 to 1850 were the source of the *Vellai* (Indian otahieti), which Barber crossed with a form of *S. Spontanium* at the experimental farm at Coimbatore early in the twentieth century. From this he developed the Co. 205 variety, an Indian cane with a fairly high sugar yield. *First Annual Report of the Agricultural Department of Bengal*, (Calcutta, 1886), p. 92. The following cane varieties were grown at the department's experimental farm in Burdwan: Assam red, Nepal yellow, Nepal black, Otahieti purple stripe or red brown, Otahieti yellow, Batavia ribbon, Batavia yellow, Batavia purple violet, Straits Settlements Tibro Caffir, Straits Settlements Ribbon, Trinidad No. 13, No 14, as fodder canes and Trinidad Caledonian Queen. C. F Barber, *Memoirs of the Department of Agriculture in India, Botanical Series* Vol. 4 (Calcutta, N/D) p 1. Barber explains the great variety of sugar canes indigenous to the sub-continent, a complexity added to by the uncontrolled introduction of exotic imports during the nineteenth century. The multitude of varieties and the complicated synonymy of the Indian sugar canes, together with the frequent Variations of the same cane in different localities, make a comprehensive study of them particularly

district in 1880. This independence allowed them to maximise their profits during periods of high demand, or when crops in other areas yielded poorly.⁷⁹

Palm Gur

Although cane juice was by far the largest source of raw indigenous sugar in Bengal, it was by no means the only one. Palm *gur*, derived from the sap of the palm trees that grew in some regions was another. In Bengal the sap of the wild date palm *phoenix sylvestris* was the source, while in Madras it was the palmyra palm or brab tree, *borassus flabelliformis*.

The Jessore region of lower Bengal was a major producer of palm sugar; the sap from which date *gur* was produced, could be tapped from November to early March, December and January being the peak months for quality and yield.⁸⁰ Date palms, an ancient source of sugar, first came to the notice of the British in 1774,⁸¹ and date sugar was first exported from India to Britain in 1792.⁸² There value as a source of raw material for the industrialised sugar factories was recognised around 1840. This recognition saw an exponential growth of palm tress from small numbers grown on the borders of properties as boundary markers and near watercourses or ponds, to a plantation industry. S. Robinson in 1840 suggested that the area of trees in sugar production in Bengal was some 2,500 hectares⁸³ or 6,390,590 trees, with a further 937,278 tapped to distil

difficult. See also: J. B Fuller, *Field and Garden Crops of the Northwest Provinces and Oudh*, (Roorkee, 1882), and H. H. Ghosh, *Sugar in India: Its cultivation, Manufacture and Trade*, (Calcutta, 1938).

⁷⁸ W. W. Hunter, *A Statistical Account of Bengal Vol., VII*, (London, 1876). P.391.

⁷⁹ E. Alexander, *Statistical, Descriptive and Historical Report of the Gorakhpur District*, (Allahabad, 1880), p. 413.

⁸⁰ J. A. R. Newlands, E. R. Benjamin and F. I. C. Newlands, *Sugar: A Handbook for Planters and Refiners*, (London & New York, 1909) p. 374. A explanation of the harvesting of palm sap and boiling to gur can be seen in L. Aubert, "The Manufacture of Palm Sugar in Upper Burma," *The Indian Journal of Agriculture*, Vol., VI, (1911), pp. 268-276.

⁸¹ Sir James Westland, *Report on the District of Jessore 1774*, (Calcutta, 1775), passim.

⁸² *E. I. S. App.* 1 p. 97, Bengal Board of Trade Consultations 4-9-1792.

⁸³ J. A. R. Newlands et al., *Handbook*, (London, 1909), pp. 374-5 and C. C Warnford Lock, G. W. Wagner and R. H Harland, *Sugar Growing and Refining*, (London, 1882), p. 419.

arrack.⁸⁴ Figures published in 1898 indicate 190,292 hectares of sugar bearing palms throughout British India; another report indicates that between 1883 and 1885 some 12,059 hectares were cultivated in Madras Province.⁸⁵

Indications are that the yield per hectare of sugar from date palms was higher than that of cane, but production figures in nineteenth century British India are problematical. Production of raw date *gur* was certainly higher than cane *gur*, a number of measurements taken suggest 19.7⁸⁶, 19⁸⁷ or even 40⁸⁸ tons per hectare. Although an accurate estimation of yields per hectare is difficult, since some of the above figures were taken from trees grown in small numbers. A reasonably accurate estimation might be gained by examining data from three separate sources. In a report submitted by J Westland in 1871, the actual number of trees per hectare was put at 815.⁸⁹ W. W. Hunter in 1879 suggested around 42 pounds of gur per tree per annum, from these two sources a yield of 15.28 tons of gur per hectare can be calculated.⁹⁰ A third source, William Reed, using data gained from indigenous sugar boilers, suggests that the above yield of *gur* would produce 2.44 tons of export quality *paka chini* and 1.22 tons of second grade sugar, or some 3.66 tons per hectare. *Paka chini* being a refined sugar, would require more palm *gur* than second grade sugar, therefore per hectare the yield of muscovado would be in the region of 5 tons per hectare. Palm *gur*, however, contained a high percentage of water and a high yield of uncrystallisable

⁸⁴ S. H. Robinson, (1849) p. 247 Appendix A.

⁸⁵ Anonymous, "Sugar Cultivation in India," *The Sugar Cane*, No. 240, Vol. XXI, (July, 1998) p. 412.

⁸⁶ S. H. Robinson, (1840) p. 198.

⁸⁷ J. A. R. Newlands et al., (1909), p. 364.

⁸⁸ Etherbert Blatter, *The Palms of British India and Ceylon*, (London, 1920) p. 10.

⁸⁹ J. Westland *A Report of the District of Jessore*, (Calcutta. 1871), p. 209 para. 11.

⁹⁰ W. W. Hunter, *A Statistical Account of Bengal, Vol. II, Districts of Nadiya and Jessore*, (London, 1879), p. 283.

process of purification save the addition of a small amount of alkali or other clarifying ingredient, and the removal of scum⁹³.

Almost one hundred years later the problems besetting gur manufacture, such as the lack of defecation, the inversion of juice through slow extraction and crude methods of boiling to *gur* were still the bane of indigenous sugar production⁹⁴ (Inversion is caused by chemical changes in the juice that produce laevulose, a form of sucrose that will not crystallise, see also Appendix 5 Tables 1, 2 and 3 for the amounts of crystallisable, uncrystallisable sugar and other impurities in a variety of colonial sugars 1847, 1882 and 1902).

A raw material with such a highly variable yield of crystallisable sugar made the problem of purchasing raw sugar problematical, and tested the skills of experienced sugar makers. The price paid in the *mofussil*; (the interiors) the riverine *hat* or the Calcutta market was to some degree the arbiter of the bottom line. It called for experience and skill. However, due to the short life span of much of this industry such skills were in short supply, and as we have seen in chapter 5 above, European sugar purchasing agents did not come cheap. The employment of agents in distant parts was unavoidable, the industrialised sugar factories could purchase all their raw sugar requirements in Calcutta, but prices

⁹³ M. P. Gandhi, *The Indian Sugar industry: Its Past, Present and Future*, (Calcutta, 1934), p. 27 The following publications were consulted for information with regard to the processing of raw sugar with in the Sub-continent. G. Clarke, Department of Land Records and Agriculture Untied Provinces of Agra and Oudh: *Notes on Improved Methods of Cane Cultivation*, (Allahabad, 1919); G. Clarke and S. C. Banerjee, "The Efficiency of the Hadi Process of Sugar Manufacture," *The Agricultural Journal of India Vol., V (1910)*, pp. 28-41, M. E. Couchman, "Difficulties in the Improvement of Indian Agriculture," *The Agricultural Journal of India*, Vol. V1, (1911), pp. 282-288, R. C. Srivastava, "A Note on the Production of Sugar Refined from Gur in Indian 1933," *Indian Journal of Agriculture*, Vol. 4 1936, pp. 414-422 and "A Note on the Production of Sugar direct from Cane During the Season 1931-32," *The Agriculture Journal of India* vol. 3 (1935) pp. 77-78.

⁹⁴*Ibid*, p. 28.

there were usually much higher,⁹⁵ and all raw sugar was sold under the single heading of *khaur*, the vendor made no differentiation in quality. The buyer had little if any redress should the raw sugar prove to be poor, as they did when purchased through merchants and middlemen. Stones of clay and other items were frequently added to increase weight. In this market it was *caveat emptor*. Close inspection of the whole batch before purchase might overcome this, but was usually not possible. Consequently, the factories used Calcutta as a market of last resort, preferring to buy from middlemen or even become involved in some vertical integration, securing gur directly from cultivators through cash crop advances.

When purchasing sugar in the *mofussil*, a difficult task faced European buyers, for quite apart from hazards such as travel and disease; the raw sugar they sought to purchase had a multitude of different names, these varied from region to region. In Azamgarh for example, Arthur Crooke's agents purchased raw sugar variously called *dhosa*, *bhalee* and *gur*.⁹⁶ each gave a different yield of crystallisable sugar. *Dhosa* yielded sixty-five to seventy percent, *bhalee* sixty to sixty-five and *gur* fifty percent or less.⁹⁷ The buyer, for his part, possessed no instruments, his only yardstick experience, his guide colour and texture. His responsibility was to judge on the spot how much dross or good crystallisable sugar each batch contained.

⁹⁵ *Select Committee Sugar and Coffee*, First Report, p. 124, Evidence of Sir Henry St. George Tucker. A noticeable increase in the price of sugar had occurred on the Calcutta market; Tucker did not think the increase in the interiors had been of the same order.

⁹⁶ Shahid Amin, "Cataloguing the Countryside: Agricultural Glossaries from Colonial India," pp. 35-53, *History and Anthropology*, 1994, Vol. 8 Nos. 1-4. An explanation is given of the compilation in 1879 of a glossary of agricultural terms for the North West Provinces to be used by British administrators. See also: William Crooke, *A Glossary of North Indian Peasant Life*, (Delhi, 1989).

⁹⁷ *Select Committee Sugar and Coffee*, First Report p. 45, Evidence of Leonard Wray,

Not only was the raw material of doubtful quality it was also subject to regular price increases between 1836-1847, as can be seen in table XIII below, fine sugar rose by around 30 percent, coarser sugar by eighty-six percent and low grade *khaur* by forty-five percent. Leonard Wray reported that in 1845 good quality muscovado cost from £13.60 to £16.40 per ton to produce, its value in

Table X111 Average Price per ton Indigenous Calcutta 1832-1847.

Year	Fine	Coarse	Khaur
1836	£18.6	£10.8	£5.3
1837-41	£24.0	£18.3	£5.8
1842-47	£24.8	£20.1	£7.7 ⁹⁸

Britain was £24.60 a ton duty excluded, freight and brokerage £5 to £7 per ton.

Leaving a profit margin of £1 to £4 per ton, this left little room for error on the part of the raw sugar buyer. An interesting comment on the buyer's ability is made by H. M. Kemshead, Chairman of the Dhobah Company, who when asked why "the company made a trading loss in 1841," compared with a profit of £36,000 in 1840 and £35,000 in 1842.⁹⁹ His reply was that the company's sugar buyers were in those years: "getting better to their work and making better arrangements [sic]".¹⁰⁰

The Dhobah factory, in common with many others, purchased raw sugar through European agents spread over much of the sugar producing regions, and only limited amounts in Calcutta. This was a quite successful strategy for several years and returns on investment were good. The original investment was £130,000, the price paid to Blake in 1838, and from 1830-to 1846 Dhobah made a net combined profit of some £120,000. From 1844, however, (prior to the Sugar Act of 1846), the effect of the rising price of raw sugar is evident from the table below. With the exception of 1841, a drought year when indigenous sugar was in short supply, it shows a clear upward trend in production costs. In 1846, for

⁹⁸ S. Robinson (1848) p. 248.

⁹⁹ *Select Committee Sugar and Coffee First Report*, pp. 98-9, Evidence of H. M. Kemshead.

Table XIV Profit and loss account from the records of H. Kemshead Dhobah Sugar Co.

Year	Price per ton London	Production cost Bengal	Profit	Loss
1839	N/A	N/A	£23,000	
1840	£37.62	£25	£36,000	
1841	£32.27	£33	*	*
1842	£31.08	£26	£35,000	
1843	£31.48	£27	£35,000	
1844	£25.34	£30		£4,500
1845	£29.70	£30	Nil	Nil
1846	£28.81	£37		£40-50,000
1847	£26.73	£28		£70,000

*Unspecified. Brokerage was not included in these prices and to allow for this they have been adjusted by five percent.

example, the sale price was only 89 pence per ton below that of 1845 but the cost in Bengal had increased by £7 per ton; the purchase price of raw sugar was obviously a major cause in the deterioration of the company's bottom line.

The careful buying strategy of Dhobah was not a feature at the more successful Cossipore factory. Here the buyers did not concern themselves overmuch with quality, but purchased raw sugar wherever it was cheapest.¹⁰¹ Obviously the variable quality of raws placed the onus on the skill of their sugar maker, which as remarked in chapter five above, was of a high level. This factory produced several grades: high quality sugar virtually equal to refined, good quality white clayed sugar and a type of muscovado that became well known to the British grocery trade as Cossipore yellow.¹⁰² The Cossipore factory also managed the sale of by-products quite well. In common with other factories they re-boiled the first drainings to obtain additional crystallisable material, the remaining by-product they sold to distillers at £1.33 to £5.40 per ton, some to Indian merchants, and the remainder they exported to Britain.¹⁰³ In view of its

¹⁰⁰*Ibid.* In this data H. M. Kemshead gave no indication of additional expenditure on plant or buildings, increased salaries or any other significant cost inputs.

¹⁰¹*Ibid.*, p. 83, Evidence of L. Hardman.

¹⁰²*Ibid.*, p. 85.

¹⁰³*Ibid.*

ability to ride out the depression of 1847-8 and continue to exist throughout the nineteenth century, this was undoubtedly the most efficient plant in Bengal.

Factories such as the Cossipore, Dhobah and Gladstone-Wylie were equipped with recent developments in sugar technology and enjoyed a duty advantage in Britain for some of their sugar exports until 1845. This took the shape of a loophole in the duty regime, which allowed all East India sugar to be imported as muscovado (Chapter 3 above). The new legislation separating East India sugar into three grades effectively changed the way in which they produced sugar, in particular those that had been nearly equivalent to refined (for details of the production of liquored or clayed sugar, see Appendix 8).

Forced into change from 1845, the production of these factories became almost exclusively muscovado. The profit per ton fell, and although muscovado was not separated from most of the molasses and was therefore heavier, unlike the clean, strong-grained East India sugar, it did not sell at or near the top of the market range. Instead of producing liquored, sun dried sugar with a low moisture content,¹⁰⁴ they were now forced to rely heavily on muscovado sugar production. This damp sugar deteriorated in humid hulls, a problem manifest during the earlier phase of sugar production in the sub-continent circa 1787-1810 (chapter 4, above). It suffered weight loss and was subject to deliquescence during the long voyage to Britain. The legislation of 1845 reduced the diversity of the extensively capitalised factories, the muscovadoes they now produced competed in the portion of the British market frequently subject to glut and low returns, with adverse consequences for a bottom line already under pressure from rising raw material costs. An example of difficulties arising from these changes was

¹⁰⁴ Leonard Wray, *Practical*, (1848), p. 371-2

explained by L. Hardman: Cossipore yellow, still classified by customs as muscovado on the basis of its colour, sold in September 1847 for £37.40 per ton in London, whiter sugars deemed to be either white clayed or single refined both sold at £39 per ton. Only an additional £1.60 per ton was secured for sugar that had lost a proportion of its bulk during the cleansing process.¹⁰⁵ From 1845 the net return on higher grades of sugar was lower than for good muscovadoes. This did not materially harm the Cossipore factory, which produced high quality and much sought after yellow muscovadoes. The plants producing industrialised sugar relied heavily on the production of high-grade clean sugars prior to 1845: these did not yield an acceptable level of profit after the legislative changes of that year.

The Gladstone Wylie factory¹⁰⁶ at Chaugachha was unique among the European factories in Bengal in the 1840s, in that it obtained all its raw material from the wild date palm, *Phoenix sylvestris*. The factory, equipped with the largest vacuum pan in Bengal and experienced West Indian sugar makers, produced 1,000 maunds or 32 tons of sugar per day.¹⁰⁷ After a very promising start in 1842, the factory encountered problems due to increased raw material costs. These were due to the activities of local merchants at the sugar marts. From 1845, they

¹⁰⁵ *Select Committee Sugar and Coffee*, First Report Evidence of L. Hardman p. 85

¹⁰⁶ A factory here refers to an establishment manufacturing industrialised sugar. There was a problem of definition with regard to these establishments in Bengal and Madras during the 1840s. See J. Leon, *An Examination of the Minutes of Evidence Taken Before the Select Committee on Sugar and Coffee Planting in Her Majesties' East and West Indian Possessions and Mauritius*, (London, 1848). p. 172. In conjunction with the evidence being given before the committee Leon discusses the problems of definition between the terms refiner, sugar maker and sugar boiler. He saw the West Indian planter as a sugar maker, in that he turns the sugar juice into the raw product that the refiner converts into white sugar. The East Indians giving evidence before the committee are in his opinion refiners, they buy raw or semi refined sugar and refined it into sugar of various kinds of sugar, which is then sold on the British market. The sugar refiner in Britain instead of being perceived as a refiner is usually referred to as a sugar boiler. The sugar manufacturer extracts the juice from the plant, concentrates it into a granulated state, and drains the molasses from it. He has produced muscovado sugar and molasses. Should the raw sugar be washed either by claying or sugar syrup, then it is no longer muscovado but clayed sugar. The perception of the British public of the West Indian manufacturer is that of a sugar planter. Despite the confusion, in the author's opinion the planters of the West Indies and the refiners in Britain stand in the same juxtaposition as distillers and rectifiers.

began to outbid the factory and divert the date gur to their *karkhanas* (Chapter 7 below). The vacuum pan of the Gladstone-Wylie factory obtained a higher percentage of crystallised sugar than the indigenous *khandisaris*-- but the latter had the advantage of profitable disposal of molasses via the sub-continental merchant network-- nor did they distil locally consumed *toddy* or arrack; there is no indication that the European refineries in northeast India other than Rosa, actually distilled arrack, it was not possible to distil palm gur into rum, because palm molasses are entirely deficient in empyreumatic oil, from which rum gets its distinctive flavour.¹⁰⁸

The legislative changes of 1845 also brought a measure of difficulty for factories processing palm *gur*. Palm *gur*, when exported in a semi-refined or raw state, tended to deliquesce even more than cane muscovado. The sap of the wild date palm *phoenix sylvestris* or the brab tree *borassus flabellifer* had higher gluten content.¹⁰⁹ Therefore, to survive the long voyage to Britain its state of refinement needed to be fairly high. Date sugar, once the molasses are removed, is a grey, crystalline sugar, an ideal feedstock for British refiners. If, however, its colour were too light, it too would pay higher duty. Hence the legislative changes brought an added degree of difficulty to the continued use of palm gur as a raw material for export sugar, at a time when the price was increasing in the Jessore markets.

¹⁰⁷ J. Westland, *District of Jessore*, (1871), paragraph 57.

¹⁰⁸ Charles C. Lock Warnford et al; (London, 1882), p. 423.

¹⁰⁹ The presence of gluten in Date sugar is discussed by S. H. Robinson, *Planter*, (Calcutta, 1849), p. 192, and Newlands et al, (London, 1909), pp. 277-8.

Capitalists, Engineers and Skilled Sugar Makers.

At the beginning of this chapter, it was pointed out that capital flowed into British India in the early 1840s, much of it used to finance the embryonic industrialised sugar industry. Some of this capital was speculative and short-term sent out from Britain in search of quick profits; it had a transient nature and was quickly withdrawn when high earnings were no longer anticipated. Not all the capital was of this nature; some was of local origin, particularly in Madras province. Indeed, the local and therefore more stable nature of this capital was probably the reason why the Madras industry did not dissipate in the late 1840s, as it did in Bengal. Consequently, a short discussion of the nature of this capital and of some of the individual investors, will serve to throw some light on the short-lived nature of the industry in Bengal. This section of the chapter will also discuss the costs associated with using British personnel to install, manage and operate these installations.

A measure of the speculative nature of the investors is obvious from evidence given by some to the Select Committee of 1847-8. For example, Arthur Crooke, a East and West India merchant of Liverpool and sugar planter in Tirhut, and Henry Kemshead, the Chairman of the Dhobah Sugar Company of Burdwan and Jessore, both complained bitterly of Peel's betrayal of East India sugar planters by the admission in 1845 of free grown sugar, and in 1846 of slave grown; both claimed to be confident of the Peel administration maintaining imperial preferences. However, even as they made these complaints, they held significant commercial holdings in sugar grown under slave conditions. In late 1846 Arthur Crooke was speculating heavily on sugar shipments from Cuba to Britain, and Kemshead had large investments in Santa Cruz, a Danish sugar

island in the West Indies.¹¹⁰ The senior partner of Gladstone-Wylie at Chaugachha in Jessore, Sir John Gladstone, was another merchant capitalist whose capital had some mobility; he was both an East and West India merchant, who by the early 1840s committed himself to the sub-continental sugar industry, after selling his West Indian plantations. An astute merchant with good contacts within the British body politic, he was among the first to cut his losses and close the plant in late 1847. A. F. Arbuthnot, permanently resident in Britain, had a financial interest in a sugar refinery in Madras. He was representative of those who invested in the sub-continental industry as part of the bubble of investment 1840-45. His interest in the sub-continent was dictated purely by short-term speculative profit; he was not prepared to continue his investment without a return of at least ten percent.¹¹¹

Some saw their investments as long-term. Dwarkanath Tagore, a Bengali banker and holder of large *zamindari* properties, was an early investor in industrialised sugar production (above), as were the principals of the Cossipore factory a few miles from Calcutta, William Howarth and Laurence Hardman. Howarth was an engineer and Hardman a merchant and inventor of the sugar centrifugal.¹¹² In Madras, the agency house of Parry and Binny, employing local and some British investment capital, also had a long-term interest in the development of a sugar industry in that province. In Bengal, the Union Bank and agency houses also invested heavily in the sugar industry, and such investments were probably intended to be long-term. However, they were also partly dependant on speculative capital acquired from British investors in the early

¹¹⁰ *Select Committee Sugar and Coffee* First Report Evidence of A. Crooke, sugar planter Tirhut. 29-31, and *ibid*, Evidence of H. Kemshead pp. 102-4.

¹¹¹ *Ibid*, Evidence of A. Arbuthnot p.p. 241-2.

1840s, and the bank as will be shown below was wracked by corruption and bad investment practises. In short, much of the capital invested in the sugar industry, was speculative and mobile; when profit margins were seriously threatened, it quickly moved to a region that promised higher returns.

Another important investment was in experientially skilled managers, engineers and sugar boilers, whose knowledge of the emerging technology was indispensable but far from cheap. To attract such people to the sub-continent salaries commensurate with their skills and the geographical remoteness were required. A. F. Arbuthnot, a partner in the Chittwalsah factory in Madras province, offered a quite detailed explanation of the cost of European labour to the Select Committee of 1847-8. Five Europeans were employed to operate two sets of machinery. The factory manager, for example, received £500 per annum, two engineers £255 each and two vacuum pan men at £175 each.¹¹³ The Dhobah Sugar Company paid its four European employees a salary range of £100 to £700 per annum. Indian public service salaries, might to some degree, have been the yardsticks by which salaries were set. For example middle ranking civil servants in India before 1858, such as Collectors and Deputy Collectors received £1,576-£2,014 per annum, a magistrate received £945.¹¹⁴

In short, the successful operation of modern technology depended, to a large degree, on the skills of engineers and vacuum pan operators, but the cost of these skills in India were high, increasing the operational costs of the industry. A comparison with Britain and Mauritius does generally indicate a much larger salary component in the sub-continent. For example, vacuum pan men were in

¹¹² N. Deerr, *History* Vol. 1 p. 56. The centrifugal is a rotating machine that throws off the molasses from processed sugar.

¹¹³ *Select Committee Sugar and Coffee*, First Report, p. 188, Evidence of A.F Arbuthnot.

¹¹⁴ P. P. 1859 (II), Vol., XXIV, *Dispatches Relating to the Civil Services* (East India), p.41.

receipt of good wages in Britain, around 1860 they received £2.50 weekly (£130 per annum), the additional £0.86 per week, or nearly £45 per annum in India, was poor for the dangers and difficulties involved.¹¹⁵ In this instance, the head engineer in Britain actually received less than the pan man,¹¹⁶ £2.38 or £124 per annum, less than half of his counterpart in India.¹¹⁷ In Mauritius, some salaries were also high. One large estate paid its manager £480 per annum, the person in charge of milling and the sugar house received £168, the engineer, who in this case happened to be coloured, £50 per annum. This estate had a steam engine, a horizontal mill and probably a Knellor evaporation system.¹¹⁸

Salaries in nineteenth century India, however, needed to reflect the risks that residence brought on Europeans whose natural environment was a temperate climatic zone. It was vital for them to possess a wide experience of sugar manufacture, to function with little supervision, and, initially, oversee inexperienced local workers. Additional costs were inherent in employing Europeans in the sub-continent, particularly in the common event of illness or death. This procedure called for a representative of the company resident in Britain to interview the replacement, or still more costly, a member of the company's Indian establishment would need to travel to Britain. In addition was the cost of transporting the replacement to India.¹¹⁹

Although no record of the salaries paid by the Gladstone-Wylie factory established in Jessore 1842, are available, these men also had considerable

¹¹⁵ William Reed, (1866), 134. The author alludes to the way in which the pan-man keeps some aspects of pan operation secret.

¹¹⁶ Noel Deerr, *History*, Vol. 2, p. 362. The skill of the pan man put him in a powerful position vis a vis his employer, this situation did not change until late in the nineteenth century.

¹¹⁷ P. Chalmin, *The Making of a Sugar Giant: Tate and Lyle, 1859-1989*, (London, 1990). pp. 49-50.

¹¹⁸ *Select Committee Sugar and Coffee*, Second Report, p. 16, Evidence of B. Chapman, merchant Port Louis Mauritius.

¹¹⁹ *Ibid*, First Report, p. 191, Evidence of A. F. Arbuthnot.

experience in the manufacture of industrialised sugar; they came from Gladstone's plantation in British Guiana. Initially the plant's manager was a Mr. Smith,¹²⁰ he was replaced after two years, possibly due to mortality or sickness, by McLeod another experienced sugar maker.¹²¹ Their experience with vacuum pans was of long standing; one was installed in 1832 at Gladstone's Demerara estate, Vreed-en-Hoop, the first vacuum pan in the British West Indies.¹²² At the Cossipore factory, the senior partner Hardman also had considerable knowledge of some aspects of engineering in connection with sugar refining.¹²³ Howarth, his partner and manager, was recognised by many in the Bengal sugar industry to have great skill and ability. Hardman, when asked at the *Select Committee* if his company had taken full advantage of capital investment and the latest technology, answered: "We have, and beyond that we have had other advantages in the ability of our manager [Howarth], such as no other party has [sic]."¹²⁴ The Ballee sugar factory, some 226 kilometres north Calcutta also had experienced European personnel. In 1869 when the plant closed, the personnel were M. W. Auger, R. White and W. Jordan.¹²⁵

Had this modern industry been able to continue operation on the same scale over a longer period, the experienced Europeans may well have passed on skills to an indigenous workforce. In the initial phase, which in many cases was also the lifespan of the industry, some British entrepreneurs did not trust Indians to handle business transactions. This may have been a widespread perception,

¹²⁰ S. G. Checkland, "John Gladstone as Trader and Planter," (1954), p. 228.

¹²¹ J. Westland, *A Report of the District of Jessore* (Calcutta, 1871), paragraph 7.

¹²² Noel Deerr, *History Vol. 2*, p. 561.

¹²³ *Select Committee Sugar and Coffee*, First Report, p. 38 Evidence of Laurence Hardman. See also Noel Deerr *History Vol. 1* p. 56, Deerr infers that Hardman must have had considerable input into the Cossipore plant. He also gives Hardman the credit for the early introduction of Centrifugals into this plant circa 1850. Hardman, however, was not present in India during the construction and commissioning of this plant. The manager, engineer and motivator of this factory were Howarth.

which led to the employment of more Europeans than was necessary, thus increasing production cost further. Arthur Crooke was one example of this perception at work. Instead of employing indigenous agents the region where he did much business purchasing both *gur* for his plantation sugarhouse at Jummoa and *khand* for direct export to Britain from the Azimghur district, he employed two Europeans at a cost of £180 per season.¹²⁶ If the industry in Bengal had not met with such an early demise, Indian labour would have undoubtedly proved both trustworthy and capable of acquiring the skills to operate industrialised sugar making technology. These very skills and the industry, which brought them to the sub-continent, had the potential to bring on an industrial age much earlier than actually transpired. Instead, the experience and skills lavishly invested in this industry 1836-1853 was in large part lost to British India when the industry failed.

The obstructive nature of the policies of the Bengal government and their lack of support to the industry, 1794-1832 (Chapter 4 above), is also relevant to the costs of raw material. Had a sugar planting sector become established in the earlier period, and either become large enough to supply clean juice, or alternatively, made mutually compatible arrangements with indigenous cultivators to supply raw *gur*. Then it may have made a sound working relationship with local merchants and middlemen, and in so doing, the purchasing raw sugars and a profitably disposal of by-products, may have eventuated.

The Logistics of Sugar Manufacture for the British Market: Bengal and Madras, 1840-1846.

An information paper written from the Jamaica Assembly tabled in the House of Commons in 1805, pointed out that one of the advantages enjoyed by

¹²⁴ Ibid, p. 84.

¹²⁵ *Thacker's Bengal Directory* (Calcutta, 1869), p.380.

sugar growers in Bengal “the extensive inland navigation available to transport sugar to the ports.”¹²⁷ The West Indians were, as usual, poorly informed about the sub-continent. They were correct in believing that Bengal had many rivers, and that innumerable riverboats sailed on them, and it is also true that they were not expensive compared with other forms of transport. However, the long distances involved and the time taken to transport sugar from the interiors to the port, losses through theft, spoliation due to heat and humidity, and the not infrequent total loss of the riverboat and cargo, all added to costs.

The cost per ton for bulk cargo on riverboats was £3.10 per ton, £0.98 for freight and £2.12 to insure against robbery. Included in this cost were the wages of a *Churrundar*, an indigenous insurance clerk, who accompanied the cargo to its destination,¹²⁸ (An allowance for loss through deterioration of the sugar in transit has also been included). The boats took two to three months from the North West Provinces to Calcutta; dependant on the amount of water in the river, low water slowed the journey and at times brought it to a halt.¹²⁹ A journey of 1,000 kilometres cost 52 pence per ton per 160 kilometres on the riverboats and £1.66 per ton or 28 pence per ton per 160 kilometres on one of the few river steamers, sugar on the latter was not insured and took about fifteen days from Allahabad to Calcutta.¹³⁰ Although these figures give an impression that the steamers were a viable alternative, they were few in number and the demand for cargo space ensured that bulk commodities, such as sugar, were excluded.¹³¹

¹²⁶ *Select Committee Sugar and Coffee*, First Report, Evidence of A Crooke p. 19.

¹²⁷ Zachary Macaulay (1823) p. 104.

¹²⁸ *Select Committee Sugar and Coffee*, First Report, Evidence of Arthur Crooke, p. 19

¹²⁹ *Ibid*, pp. 19-20.

¹³⁰ H. T. Bernstein, *Steamboats on the Ganges*, (London, 1987), p.84.

¹³¹ *Select Committee Sugar and Coffee 1847-8*, First Report, pp. 19-20. Crooke's evidence can be confirmed in Bernstein (1987) page 92; country boats cost 0.5 new pence per mile down stream and 0.66 new pence per mile up-stream. The cost of sending freight by steamer is about the same. Bernstein, however, points out

The Madras Presidency also presented some difficulties with internal transport costs. The Presidency was a vast territory, stretching from the western coast (Malabar), and encompassing much of the eastern coast of the sub-continent. This vastness was a problem encountered by Binny and Company at their modern plant equipped with £18,000 worth of buildings and machinery at Ganjam--an investment made in the halcyon days of high prices, 1842-46. In Ganjam river transport was not available, leaving little alternative but to transport output some thirty miles to the coast on the backs of bullocks or in *bandies*, bullock carts. When the sugar reached the nearest port, the facilities for loading were minimal; the port was little more than an open sea road where coastal vessels were loaded from lighters and then carried the sugar some 1,200 kilometres to the international port of Madras.¹³²

International transport also presented problems to exporters of bulk cargoes, particularly when the export of sucrose products increased significantly during the 1840s. Increased demand meant competition for the limited amount of cargo space, especially at the lower rates available to gruff or ballast commodities. During the period 1836 to 1845, sucrose products could be accommodated at ballast rates without too much difficulty. In 1846, however, rumours began to circulate that large quantities of cheap sugar were to be used by British distilleries and brewers.¹³³ *Khaur*, which could be purchased in Calcutta for as little as £5.50 per ton,¹³⁴ was an ideal product to fill this demand.

that cargo space on the river steamers was significantly less than demand. Because of this, government dispatches, mail and smaller articles of high value were the usual items carried. The actual cost per dead weight ton was Rs. 140 to Rs. 200.

¹³² *Select Committee Sugar and Coffee*, Third Report, pp. 164-5, Evidence of W. Scott, Partner with Binny and Company in a sugar refinery at Ganjam.

¹³³ *Ibid*, Eight Report p. XXIII. These rumours led to an expectation of some 50,000 tons of sugar being used in breweries and distilleries.

¹³⁴ *Ibid*, First Report, p. 56, Evidence of Leonard Wray.

In the event, the speculative gains of some East India merchants would prove to be at the expense of others. The requirements of ballast cargo at cheaper rates was finite, a sudden increase would force some sugar to pay the full freight rates.

East India sugar imports to Britain by the mid 1840s were of three types: 20,000 manufactured in the European factories, 35 to 40,000 tons of *khandisari sugar*,¹³⁵ and some low-grade *khaur*. From 1847 exports of *khaur* for the speculative brewing and distillation market rose. A survey of the period 1845-49 clearly indicates this, in 1845 some 55,604 tons of East India sugar was imported, most of which was *khand* and vacuum pan sugar. In 1846 imports increased to 71,379 tons and, as with the previous year, virtually all was of similar grades and consumed in Britain.¹³⁶ In the next three years, 14,174, 6,292 and 8,961 tons of East India sugar did not enter into home consumption, it was low quality *khaur* imported in response to this speculation.¹³⁷ In 1850 all East India imports plus 6,627 tons of built up stocks were consumed in Britain.¹³⁸ The remainder, some 22,000 tons, a build up in 1847-49 and adjudged unfit for the grocery trade or for British refiners, was re-exported to Europe; as it turned out, the amount of cheap sugar used in distilleries was small.¹³⁹ The speculative trade in *khaur* during this

¹³⁵ *Ibid.*, p.181, Evidence of A Alexander, East India merchant.

¹³⁶ P. P. (47) XXXVIII. 471 (1857) *Imports to the United Kingdom of Colonial Goods Retained for Home Consumption and Re-Exported 1800-1856*.

¹³⁷ *Select Committee Sugar and Coffee 1847-8* Eight Report, Appendix 1 p. 4. Letters and Papers presented by B. B. Greene Sugar Broker, Mincing Lane London. In the year ending April 1848 Greene's records indicate that between 7,000 and 8,000 tons of *khaur* were imported with a value of £8 to £14 per ton net. The price in Europe was often £4 to £5 per ton higher than London this covered the cost of shipment and insurance.

¹³⁸ P. P. (47) XXXVIII. 471 (1857) *Imports to the United Kingdom of Colonial Goods Retained for Home Consumption and Re-Exported 1800-1856*.

¹³⁹ P. P. 1868-9 (191) LV1.489 *Account of Sugar, Molasses, Rum, Coffee and Cocoa imported into UK from West Indies, Mauritius and India 1845-68*. An idea of the amount of sugar used in breweries can be gained from this paper, which indicates that at by 1868, consumption in breweries in England, Scotland and Ireland was 16,790 tons per annum. By this period most of this sugar was *khaur*.

period was of such magnitude that John Bagshaw MP brought it to the attention of the select Committee.¹⁴⁰

This sudden deluge of *khaur* had a detrimental effect on sugar shipments from late 1846 and through 1847. Post monopoly ships plying the route between India and Britain had increased significantly, but high short-term demand for cargo space could not be easily met. Sailing ships, as shown in (Chapter 1 above), needed sugar or other “gruff” cargo as stabilising ballast stowed low in the hull. On the British India-Britain route three commodities—rice, saltpetre and sugar—competed for this cheaper space.¹⁴¹ The demand for saltpetre was fairly constant, while rice exports fluctuated, but during 1846 and 1847 rice shipments increased considerably (Appendix 1 Table 34).¹⁴²¹⁴³ Rice was also loaded in Calcutta and Madras for Mauritius; where it was used to feed indentured Indian sugar plantation workers,¹⁴⁴ once again working in the islands’ sugar industry.¹⁴⁵ These shipments reduced the amount of space available at ballast rates; because it was loaded on ships bound for Britain via Mauritius, where it was unloaded and replaced by local sugar exports.

The actual amount of cargo space available at ballast rates can be ascertained from the known ballast space required per ship and the numbers of vessels using the port of Calcutta. For example, a sailing ship required around three fifths of the weight of cargo to be heavy or gruff items; this ratio per ship

¹⁴⁰ *Select Committee Sugar and Coffee*, First Report, p. 34, Evidence of John Bagshaw M. P.

¹⁴¹ *Ibid*, p.38, the cost per ton for gruff cargo, 1840–45, was usually £5.

¹⁴² G. R. Porter, *Progress*, (1848), p. 573.

¹⁴³ *Select Committee Sugar and Coffee*, First Report, p. 28, Evidence of Arthur Crooke.

¹⁴⁴ P. P. 1847–48 (749) XLVI.323, *Papers Relating to Distress in the Sugar Colonies*. p. 379. Rice was generally shipped to Mauritius January–March, the end of this period coincided with large-scale shipment of sugar from Calcutta and Madras. The increase in the number of bags shipped 1846–7 is demonstrated by the following figures: 1845 79,067, 1846 124,931, 1847 104,885, 1848 54,454.

¹⁴⁵ Lance Brennan, John MacDonald and Ralph Shlomowitz, *The Geographical and Social Origins of Indentured Labourers in Mauritius, Natal, Fiji Guyana and Jamaica*, (Adelaide, 1995) Indentured labour

multiplied by the number of ships sailing from Calcutta 1846-7 and 1847-8, indicates an average ballast cargo space of 80,000 to 90,000 tons (Appendix 1 Table 35).¹⁴⁶ When in 1846 and 1847 gruff cargoes exceeded this limit, it had three adverse effects on the sugar trade. Some sugar paid higher rates as ordinary cargo, additional demand allowed ship owners to increase the rates for all cargo and the shortage caused some sugar to be loaded on unsuitable vessels (only sound, dry ships were suitable to carry sugar).¹⁴⁷ Sudden increases in cargo could not be easily met through hiring additional shipping, fluctuation in demand was considerable, for example, when rice crops in the Carolinas were good, demand on India fell.¹⁴⁸

At a time when production costs in Bengal were increasing there was upward pressure on freight costs, the £3.50-£5 per ton available in the early to mid 1840s, had increased to £8.62-£10 by 1847.¹⁴⁹ Freight costs from Madras, under similar pressure to those of Calcutta, also increased from £4 to £8.62 per ton.¹⁵⁰ The increase in *khaur* shipments put pressure on the available space, as did the growing trade in rum and molasses; these were transported in barrels and presented specific problems. For example, care was needed with the stowage of barrels: bags of sugar were stowed low in the hold, but barrels were loaded

was used in Fiji, Natal, West Indies and Mauritius from circa 1836. The use of this labour enabled planters to control the wages and the length of the working day, but they were expensive to recruit.

¹⁴⁶ E. Wilkinson, *The Commercial Annual, or Tabular Statement of the Commerce of Bengal During the Years 1846-7 and 1847-8*, (Calcutta, 1848), p. 29 Total sugar loaded in Calcutta in 1846-61, 695 tons, 1847-8, 59, 908 tons. *Ibid*, p. 104. In 1847-7 243 ships sailed from Calcutta. Their cargo capacity was 119, 348 tons and their ballast requirement 71,609 tons. In 1847-8 the gross cargo capacity was 134,180 ballast requirement 80,508 tons.

¹⁴⁷ *Select Committee Sugar and Coffee*, Second Report, p. 51 Sir George Larpent was a merchant with long East Indian experience and a sugar planter in Mauritius.

¹⁴⁸ William Milburn, *Oriental Commerce*, (1825) p. 298. Rice grown in the American States of North and South Carolina originated from a bag of Patna rice given to an American trader by Mr. Dubois, the Treasurer of the East India Company.

¹⁴⁹ *Ibid*, p. 30, Evidence of Arthur Crooke, p. 186, Evidence of Nathan Alexander. Eighth Report Appendix 1 p. 17, In February 1848 freight from Calcutta cost £5.25 per ton for sugar.

¹⁵⁰ *Ibid*, Third Report, p.33, Evidence of John Utlay Ellis, senior partner Parry and Co. Madras.

wherever space could be found. If they seeped or were staved during rough weather, spoilage to other cargo resulted. In short, a considerable cost problem emerged from mid 1846 to late 1847, to capacity and to the cost of exporting the sugar and by-products: due to industry's growth being too rapid for the infrastructure supporting it.

By-Product Production in Bengal and Madras

The commercial viability of plantations and refineries depended upon their ability to efficiently utilise by-products, the European sugar factories in Bengal and Madras were no exemption. If indeed, the molasses content of indigenous raws was as high as forty-percent, then it was of particular importance in the sub-continent.¹⁵¹ The industrialised sugar factories in India, however, did not generally use by-products efficiently. Many were unable or unwilling to form links with the large domestic merchants who had considerable experience in profitably disposing of the by-products produced in *karkhanas*. In contrast to the small indigenous processors, the industrialised sugar industry produced considerable quantities of molasses. Although this presented a serious problem, surely the indigenous middlemen, given time to adjust to higher production, would have found customers amongst the large local population. The Indian people consumed molasses in a variety of ways: by mixing with food grains, in sweet meats, steeping tobacco, as a constituent part of pukka mortar, while palm and cane molasses were distilled into toddy or arrack.¹⁵²

The Industrialised sugar factories received around £2 per ton from these dealers, which was considered a poor return. The Cossipore factory, however,

¹⁵¹ S. H. Robinson, (Calcutta, 1849), p.116. Select Committee Sugar and Coffee, First Report, p. 24, Evidence of Arthur Crooke: The molasses content of cane in Bengal was said to be substantially higher than in West Indian canes. Crooke did not state what this percentage was.

¹⁵² S. H. Robinson, (1848), p. 196.

was able to do much better; they averaged £3.36 per ton. Their customers were the nearby European rum distilleries.¹⁵³ They also exported some molasses to Britain to be used by food processors or brewers; some was processed to recover any crystallisable sugar it contained. Molasses paid 33 percent of the muscovado sugar duty.¹⁵⁴

The figures from the Cossipore factory, however, show that distilling to rum was by far the most cost effective use of molasses. After 1836, just as sugar began to have a higher profile in East India trade, Bengal rum was also granted easier access to the British market.¹⁵⁵ In 1837 the duty on East India rum was reduced from £1.60 per gallon to £1.20;¹⁵⁶ in 1841 a further reduction to £0.47 pence per gallon occurred, placing East India rum on the same footing as West Indian.¹⁵⁷ These measures, although helpful to distilleries near to Calcutta, did not redress problems encountered by those in the *mofussil*. The up-country distiller fell foul of the red tape of the Bengal excise regime, particularly in securing movement passes; the issuing officials frequently resided in an administrative centre some distance from the distillery. The payment of a bond on rum in transit to Calcutta was an additional cost outlay. Difficulties encountered during transportation, such as leakage through poor handling on riverboats, evaporation due to exposure in transit, and the cost of the government agent resident at the distillery, were all met by the distiller.¹⁵⁸ These costs ensured sugar producers in the interiors would not find a profitable outlet for their

¹⁵³ *Ibid.* and *Select Committee of the House of Lords 1840* Vol. VII, p. XL

¹⁵⁴ P. P. 1857 (47) XXXVIII.471 *Quantity of Sugar, Molasses and Rum Imported 1831-1856*. Some 10,550 tons of molasses were imported from India, with a further 41,378 tons imported and converted into sugar.

¹⁵⁵ *Ibid.*, pp. 67-8. From 1836 the Royal Navy purchased rum from Bengal. Bengali rum was introduced to Canada at around the same time where it apparently sold quite well.

¹⁵⁶ *Ibid.* V11, p. XL

¹⁵⁷ P. P. (1841) Session 1 4911, *Bill to Reduce the Duty of Rum Imported from British Possessions in East India*:

molasses. Arthur Crooke at Jummoa, for example, ran his molasses to waste;¹⁵⁹ this may have been common occurrence. Many of the larger industrialised manufactures were situated in a radius of 160 kilometres from Calcutta; it was these establishments that produced the bulk of rum export.¹⁶⁰

Although East India rum was not as popular in Britain as West Indian,¹⁶¹ the quantities exported were quite impressive. In 1837, for example, the first full year after equalisation of sugar duties, 65,731 gallons were exported to Britain compared with 4,833,531 gallons imported from the West Indies. During the ten-year period 1842-1851, West Indian rum export to Britain averaged 3.8 million gallons, East India 692,488.¹⁶² In addition to this, some 113,467 gallons were shipped from Calcutta to the Australian colonies from 1840 to 1847, with another 5,000 gallons per year to Pegu and to France (Appendix 1, Tables 36 and 37). The Dhobah Company, and therefore any other distillery near Calcutta under efficient management, made acceptable profits from rum until the collapse of prices in 1847-8.¹⁶³ Apparently East India rum had its own distinctive taste, one that was not popular among British consumers. This did not prove to be a barrier as a profitable re-export market was found.¹⁶⁴

The efficient use of molasses by the European sector in Bengal was less than satisfactory, some profitable outlets were found, but more effective marketing

¹⁵⁸ *Select Committee Sugar and Coffee*, First Report, pp. 15-16, Evidence of Arthur Crooke. Crooke also complained of the excise duty in India.

¹⁵⁹ *Ibid*, p. 23.

¹⁶⁰ *Ibid*, p. 32, Evidence of John Bagshaw MP. Bagshaw tells the Committee that in early 1848 the Dhobah Sugar Company had 350,000 gallons of rum awaiting shipment to Britain. This quantity represents around half of the annual average export to Britain through this period.

¹⁶¹ *Ibid*, p. 33. Bagshaw told the Committee that East India rum was lower in quality but higher in proof strength than West Indian.

¹⁶² P. P. 1857 (47) XXXVIII.471 *Quantities of Sugar Molasses and Rum Imported into Britain Retained for Home Consumption and Re-exported 1831-56*.

¹⁶³ *Select Committee Sugar and Coffee* First Report, p. 105, Evidence of H. M. Kemshead.

in the sub-continent might have occurred with a better level of integration and cooperation between the Europeans and the indigenous merchants. Many East India witnesses at the Select Committee mentioned molasses, but they did not speak of any discussion or cooperation between indigenous merchants and Europeans.

The European factories of Northeast India, with the exception of Rosa, did not distil arrack or toddy for local consumption; this reduced their viability, particularly those processing date *gur*. The European owners and investors were intent upon the supply of one single market, the UK, which by late 1847 was suffering from a price slump, and by 1854 it would be a free market with no protection extended to the colonies.

The situation with regard to by-products was somewhat different in Madras, for unlike their counterparts in Bengal, they distilled arrack for domestic consumption,¹⁶⁵ as well as small amounts of rum for export.¹⁶⁶ It was the combination of arrack distillery and sugar refinery that proved successful for the factories owned by the agency house Parry and Company. Their factory at Bandepollium, built in 1842, obtained a distillery licence in 1844. A second built at Kallakurichi in 1844 began distilling in 1849 and a third, erected at Nellikuppam in 1845-6, opened a distillery in 1848.¹⁶⁷ The processing of palm *gur* into arrack was probably more important than sugar; much of the profit actually came from distilling and vending arrack. Parry and Company obtained widespread *abkarri* licenses (the licensed distribution of spirituous liquor over a defined area) and set

¹⁶⁴ G. R. Porter, *Progress* (1848) p. 750, and P. P. (1847) Vol., LX, Imports and Exports of the United Kingdom the West Indies, East India Company's Territories, Ceylon, China etc. Some 3,104,230 gallons of rum was exported from British India 1834-1846.

¹⁶⁵ *Select Committee Sugar and Coffee* First Report p. 127, Evidence of F. W. Prideaux Examiner of East India Correspondence.

¹⁶⁶ *Ibid*, Third Report, p.32, Evidence of J. U. Ellis, Senior Partner Parry and Co. Madras.

up a distribution network covering much of the Province, this ensured the long-term viability of all their factories.¹⁶⁸ Binny and Co. were also engaged in the distilling of arrack at the Asaka factory in Ganjam.

The Financial Crisis 1847-8.

When in 1847-1848 an economic crisis suddenly affected Britain, Western European and the colonial economies, the industrialised sugar industry of India received a near fatal blow. Among the several causes of this crisis were over speculation in British railway infrastructure, a drain on the gold reserves of the Bank of England through payments for American cotton, a poor corn harvest in Britain, costs associated with the Irish potato famine of 1845 and a financial crisis and revolution in France.¹⁶⁹ The effect upon trade was both sudden and dramatic with the grain, East India and Mauritius trades worst affected,¹⁷⁰ Calcutta suffered particularly severely.

The tendency of the Government in Bengal, Agency Houses and Banks to put their major emphasis on the remittance trade to the detriment of the fuller economic development of the province has been discussed in chapter four above. The general weakness of the financial sector of Bengal in the 1840s has also been extensively analysed by economic historians, detailing corruption and doubtful trading practices, banking institutions that lacked liquidity and were prone to failure.¹⁷¹ With this tendency toward economic instability evident, the bank and

¹⁶⁷ Hilton Brown, *Parry's*, (1954), p. 85

¹⁶⁸ *Ibid*, p. 86

¹⁶⁹ *Parliamentary Debates Volume LXXV* (1844), pp.382-390 passim. The Chancellor also pointed out that in the spring and early autumn of 1847 the Bank of England had acted unwisely by advancing monies to large companies for the payment of dividends. *Ibid*, p. 390, He also reported that between £50 and £60 million liquidity available to the commercial world was not available, "it had been swallowed up by investment in railway companies."

¹⁷⁰ (Secret) *Select Committee on Commercial Distress* (1848), Evidence of W. P. Paton, p. 114.

¹⁷¹ N. K. Sinha, "European Banking in Bengal, 1793-1848," *Bengal Past and Present*, Volume LXXXIII, Part 1 No. 165, (January-June, 1969), pp. 18-32. K. N. Chaudhuri, "Foreign Trade and the Cessation of the East India Company's Activities," *Economic History Review*, XIX, (Second series, 1966) pp. 345-363.

agency house failures of 1847-8 should perhaps not have been such a surprise. For example, less than twenty years earlier, 1830-34, the same financial institutions became insolvent, due in part to poor investment practices.¹⁷² Privately owned banks in Calcutta, fared little better, they were frequently under the control of the Agency Houses, and tended to follow their fortunes. A few joint stock banks existed; but they too possessed only small capital reserves.

The way in which East India commodity trade was financed was at the heart of the problem. By 1840, much of it was conducted either by means of hypothecation,¹⁷³ in which the East India Company sold bills to the exporter based on seventy-five percent of the value of the export commodities, or through bills raised by the private merchants in Calcutta working in concert with agents in London. The latter, often had a period of ten-month maturity, it was this duration of maturity, which led to highly speculative practices through the frequent discounting and re-discounting of bills during their currency. By means of this virtually continuous use of a bills meant to cover one particular transaction, mercantile houses in Calcutta were able to gain access to a continuous flow of credit. Frequently, however, no actual produce existed as collateral.¹⁷⁴ This

Amiya Kumar Bagchi, "Transition from Indian to British Indian Systems of Money and Banking 1800-1850," *Modern Asian Studies*, 19,3, (1985) pp. 501-519. "Banking in Bengal, 1793-1848," *Bengal Past and Present*, Volume LXXXIII, Part 1 No. 165, (January-June, 1969), pp. 18-32. K. N. Chaudhuri, "Foreign Trade and the Cessation of the East India Company's Activities," *Economic History Review*, XIX, (Second series, 1966) pp. 345-363.

¹⁷² The definitive work on Agency Houses is B. S. Singh, *European Agency Houses in Bengal (1783-1833)*, (Calcutta, 1966)

¹⁷³ For the problems brought about by the Company governments operation of hypothecation of commodities such as sugar, see: Amares Tripathi, "Indo-British Trade Between 1833 and 1847 and the Commercial Crisis of 1847," *The Indian Historical Review*, pp. 304-319, and N. K. Sinha *The Economic History of Bengal*, Vol. 3 (Calcutta, 1970) pp. 28-34.

¹⁷⁴ *Parliamentary Debates*, House of Lords Thursday 2-12-1847 p. 495. Lord Lansdowne reported: "seventy-nine mercantile houses had failed in 1847, with a total capital loss of £15,969,000." *Secret Select Committee on Commercial Distress (1848)*, p.108 Evidence of W. P. Paton. The number of mercantile houses that failed in Calcutta was 22, with a capital involvement of £2-3 million. *Ibid*, p. 123. The average total exports from India for the period 1833-4 to 1846-7 were £10,100,000. The failures of 1847 represent some thirty percent of this annual trade.

doubtful and risk prone means of financing much of the East India trade was common practise.

When in late summer and early autumn of 1847 liquidity tightened, produce brokers in Britain began to carefully scrutinise all produce bills to ascertain their credit-worthiness. Enquiries that brought to light the parlous state of East India trade and the bubble of credit created by this dubious use of produce bills: once aware of this fraud brokers refused to discount them.¹⁷⁵ The revelation of the extent of over speculation and actual dearth of operating capital quickly rendered many British based colonial mercantile houses insolvent. Houses in Calcutta had the most exposure to this accumulation of credit, and they had little real capital; some had produce in warehouses in Britain or en route to theoretically cover their exposure. Unfortunately, these commodities, principally sugar and indigo, were worth less than the bills drawn against them, due to the rapid fall in prices in Britain late 1847. Consequently, twenty-two of the houses in Calcutta could not cover their indebtedness and failed (Appendix 4, table 2).¹⁷⁶ N. K. Sinha and B. B. Kling have argued that the Union Bank not only suffered from the volatile capital market, but also from the corrupt practices of the of British residents who served as directors. When it collapsed, the Union Bank was Calcutta's largest private bank with much of its capital tied up in mortgages to indigo and sugar producers.¹⁷⁷

¹⁷⁵*Parliamentary Debates*, Third Series Volume XCV (1847), p. 391. Speech of the Chancellor of the Exchequer.

¹⁷⁶*Ibid*, House of Lords Thursday 2-12-1847 p. 495. Lord Lansdowne reported: "seventy-nine mercantile houses had failed in 1847, with a total capital loss of £15,969,000." *Secret Select Committee on Commercial Distress* (1848), p.108 Evidence of W. P. Paton. The number of mercantile houses that failed in Calcutta was 22, with a capital involvement of £2-3 million. And *Ibid*, p. 123. The average total exports from India for the period 1833-4 to 1846-7 were on average £10,100,000. The failures of 1847 represent some thirty percent of this annual trade.

¹⁷⁷ The Union Bank was heavily involved in Indigo plantations, particularly in Tirhut. For the Banks failure see: N. K. Sinha (1970) pp. 63-68. Blair B. Kling, *Partner in Empire*, (Calcutta, 1961), pp. 198-229 passim.

Quite apart from the sudden fall in prices of sugar, there were two other reasons why the financial crisis of 1847-48 was particularly severe on the sugar industry. Much of the industry was still in a developmental stage and had not yet reached the point of producing any return on capital, and there was also a strong connection between many who had invested in the sugar installations and the collapsed Union Bank and agency houses¹⁷⁸ (Appendix 4, compare tables 1 and 2).

For the mercantile community in Calcutta 1847-48 was indeed traumatic; trade was at a virtual standstill for several months and when the extent of the corruption surrounding the Union Bank emerged, it added to this sense of shock.¹⁷⁹ Bengal, in late 1847, suffered from an almost total lack of capital. Little of this was made available to an industry manufacturing sugar for the British market, which at that time offered low returns or actual losses. In late 1847 and 1848, many with investments in the manufacture of industrialised sugar in Bengal, could see little prospect of a return to profitability. Their information was that by 1851 British sugar import duties were to be equalised; no longer would Colonial sugar have the benefit of protection, and the higher prices this protection had afforded; the date of equalisation was extended in July 1848 to 1854. In 1847, however, the prospect of profits seemed non-existent, had they known the extension was coming it may have delayed their decision.

European entrepreneurs able to move their capital to greener pastures, such as Kemshead, Gladstone or Crooke, were amongst the first to abandon the

¹⁷⁸ Shahid Amin, (1984) p. 30.

¹⁷⁹ Anonymous, *The Calcutta Review*, Volume IX (January-June, 1848), pp. 163-180, passim. The author of the article wrote of the problems cause by hypothecation and the shame felt by the community through the sharp practices of many European residents, particularly those with involvement in the Union Bank. The article was severe on the damage to the reputation of the commercial community in Calcutta, and expressed the hope of a future in which a fair and equitable system of finance would operate in Bengal.

sub-continental sugar industry. The planters in Tirhut and Champaran, and those in other sugar producing regions of Northeast India, however, did not enjoy this mobility. Many had connections to the Union bank, but now they could no longer access working capita, with sugar prices low, many to ceased sugar production and fell back on indigo cultivation.

The Industrial Sugar Factories Post 1848.

This chapter has demonstrated that a combination of factors brought a sudden end to industrial sugar production in most of the installations in Northeast India: raw material costs, commercial depression in 1847-8, and the fear of investors that the international nature of the British sugar market from 1846 would continue to depress sugar prices. The sugar plantations in Tirhut and Champaran were the first to close, they were closely associated of many with the Union bank and insolvent agency houses. The largest sugar company Dhobah, also closed its doors. Blake its founder went out to Bengal in 1848 in an attempt to save some of the operation.¹⁸⁰ He failed and the company was spit up. Mr Newman purchased Kotchandpur and Mr Saintsbury Trimohini, both factories worked intermittently until 1855. Newman actually invested in a new factory at Tahirpur in Jessore in 1853, but closed it some four years later. The Gladstone-Wylie factory at Chaugachha worked intermittently until 1853.¹⁸¹ By 1864, however, few factories in Northeast India were left in operation. They were the Cossipore works of Hardman Howarth, which continued into the twentieth century, the Rosa factory at Shahjehanpore, Mcinnes at Seibpore, Robinson at Goosery, Bedford and Company at Bellaghatta and the Ballee sugar works some 225 kilometres north of Calcutta. Only Rosa and Cossipore survived through the nineteenth century. The

¹⁸⁰ *Select Committee Sugar and Coffee*, First Report p. 170, Evidence of Nathaniel Alexander.

Ballee works closed in 1869,¹⁸² and a factory in Dacca also continued to export sugar until circa 1865.¹⁸³ The factories that survived the period 1846-1854, manufactured sugar for the small but growing market of British residents; exporting their produce intermittently to Ceylon, or to Britain when shortages forced the prices up. The Rosa factory at Shahjehanpore in the United Provinces, essentially a gur refinery, produced arrack and good quality flavoured spirit that looked and tasted similar to brandy and whisky.¹⁸⁴

The white sugars produced by the remaining factories, began from 1861 to face competition from the light coloured sugars of Mauritius, in 1862, for example, Mauritius sugar exports to the sub-continent increased, with much of the 7,834 tons going to Bombay and smaller quantities to Calcutta. These imports progressively increased to 26,670 in 1869-70 (Appendix 1, Table 39).¹⁸⁵ This market grew strongly from 1870, due in part to sugar producers in Mauritius seeking an alternative market to the Australian colonies, where the domestic product was now dominating sales.¹⁸⁶ In 1868 the production of "plantation white", came into being, due to M. Icery's pioneering work with the use of sulphur to decolourise muscovado sugar. This direct consumption sugar enabled the Mauritius to becoming the major supplier of white sugar to Bombay for the next three decades.¹⁸⁷

The 1846 Sugar Act, and the colonial depression of 1847-48, did not cause a mass exodus of Europeans from the Madras sugar industry, as it did in Bengal.

¹⁸¹ J. Westland, *Jessore*, (1871), paragraph 4, p. 208.

¹⁸² *Thakers Bengal Directory* (Calcutta, 1864), p. 116. And *Ibid*, (1869) p. 380 and *Ibid* (1870).

¹⁸³ William Reed, *Sugar Yielding*, (1866), p. 94.

¹⁸⁴ Sir George Watt, *Economic Products*, (1908) p.956.

¹⁸⁵ Anonymous, "Sugar Exports from Mauritius to India," *The Sugar Cane*, Vol., 11, No, 24 (December, 1871), p. 640.

¹⁸⁶ Anonymous, "Sugar Production in Mauritius," *The Sugar Cane*, Vol., 1 No. 1 (1870) p.240.

The exporting of industrial sugar from Madras Province did not expand after 1850. The industry turned to processing palm gur into industrialised sugar. Cane cultivation remained quite small at: 15,378 hectares in 1852;¹⁸⁸ and by 1883-84, despite population growth only 25,091 hectares were cultivated.¹⁸⁹

The European factories of Madras also experienced customs problems after the legislative changes of 1845; their best quality muscovado was occasionally classified as white clayed or single refined.¹⁹⁰ To overcome this problem they produced strong crystalline brown sugars, which found a market at the British refineries. This sugar, when landed in Britain had a value of £26-£28 per ton exclusive of duty 1849-1855, a period during which the wholesale price was £22-£24 per ton exclusive of duty (these are average figures and do not indicate the highs and lows of the market). A return to the period 1825-36 when sugar exports from the sub-continent were profitable, providing above average prices could be obtained, and even then margins were small.¹⁹¹

After 1846, a few of the industrialised sugar plants in Madras Province also closed, but the principle establishments owned by the agency houses of Parry¹⁹² and Binny continued to operate. Parry actually went on to expand their sugar operations, building a factory at Tiruvanallur in 1855 in the heart of palm growing country, taking advantage of the profitable combination of sugar and arrack production.¹⁹³ In 1856 F. J. V. Minchin came to the Binny's Asaka plant in

¹⁸⁷Noel Deerr *History, Vol. 2* (London, 1950) p. 580. See also A. North Coombes, *The Evolution of Sugarcane Culture in Mauritius*, (Reduit. 1937) p 129.

¹⁸⁸A Sarada Raju, (1941) p.83.

¹⁸⁹"Sugar Cultivation in India, *The Sugar Cane*, No. 240, Vol., XXI (July, 1898), p. 212.

¹⁹⁰*Select Committee Sugar and Coffee*, Third Report, p. 241, Evidence of A. F Arbuthnot

¹⁹¹Hilton Brown, (1954), p. 98. During the 1850s and 1860s Parry, the largest manufacturer of sugar in Madras frequently lost money on sugar exported to London.

¹⁹²*Statistical Abstract of Colonial and Other Possessions of the United Kingdom 1854-1860* (London, 1870), p 64-66. Construction of a railway from Madras City to the Arcot district began in 1853; when complete it gave better access to the sea for the sugar produced in North and South Arcot.

¹⁹³Hilton Brown, (1954), p. 85.

Ganjam, then refining palm *gur*. He changed most of the factory's production to cane sugar, but instead of using crushing mills he installed the then new diffusion process, which leached the sugar from the canes.¹⁹⁴ The Asaka plant and Parry's factories continued to manufacture industrialised sugar throughout the nineteenth century supplying internal and export markets. It was the production of arrack from palm *gur* and its distribution through abkarri licenses that kept these plants viable.

The Export Sugar Industry and the Company Government 1836-1848.

In Chapter 4 (above) it was argued that the policies of the Company government were a major factor contributing to the lack of development of a sugar plantation industry before 1836. The short sightedness of such policies came into sharp focus during the 1840s, when British India increasingly looked to sugar export earnings to pay the home charges. For example, by 1846 export earnings of this industry were £1.6 to £1.7 million, a considerable proportion of the £3,000,000 of commodity exports,¹⁹⁵ the home charges remitted primarily through bills of hypothecation on exports amounted to £3.300,000 or £3.700,000 per year when payment to East India stockholders was included. Yet despite the contribution of sugar exports, virtually no effort was made by the government in Bengal to enhance the prospects of the industry.¹⁹⁶

The influence of the Company government in London, as shown in chapters 2 and 4, was weak by 1813 and did not improve as the century progressed. Their influence with regard to major changes in British policy toward East India sugar was negligible. For example, when equalisation came in 1836

¹⁹⁴ Sir George Watt *Economic Products*, (1908) p. 953

¹⁹⁵ *Select Committee Sugar and Coffee* First Report, p.115, Evidence of H. St. G. Tucker.

¹⁹⁶ *Ibid*, p. 77, Evidence of Col. W. H. Sykes, Director East India Company

the government of India received no prior notification, and once again in 1846 when the British government did a volte-face with regard to colonial protection, they were not consulted. Consequently they had little time for significant adjustment to the problem of financing the remittance trade or of making changes to the economy of Bengal. In short, British domestic politics and national economics took precedence. The policy changes of 1845 and 1846; were intended, in part at least, to lower the price of British food. The Bengal economy and East Indian commerce, although significant, was barely considered. The difficulties brought about by this change were quickly apparent: by 1848, when the government was forced to resort to exporting bullion to meet its obligations to the home government, causing a drain on gold and silver reserves in British India, whenever this was resorted to it tended to deepen trade depression in the sub-continent.

Despite the serious effect of these changes, senior spokesmen for Company, Tucker, Prideaux and Sykes, all gave a restrained performance before the *Select Committee* of 1847-8. In the face of the difficulties this policy shift brought, a stiffer fight for a continued protection of the sub-continental sugar exports was called for. Instead they all acted in a manner suggestive of their acceptance of a *fait accompli*: in modern parlance the Company rolled-over. They were not consulted nor did they seem to object to the almost certain demise of the export sugar industry. They were, and acted like, as C. E. Carrington describes, a subsidiary organ of the British government, something akin to public utility:¹⁹⁷ the Company government was a body once removed, and as such, not central to the thoughts of policy makers in London. By 1848, the ramifications of the Sugar Act

¹⁹⁷ C. E. Carrington, *The British Overseas*, (Cambridge, 1968), pp. 429-30.

of 1846 and the commercial depression of 1847-48 had caused deep distress in all the British sugar colonies. India, despite having a large export sugar industry, was not perceived as a sugar colony, and although the British government listened to the complaints from all her sugar colonies, India was not included.¹⁹⁸

Those that spoke for the Company' before the Select Committee in 1847-1848, such as Henry St. George Tucker chairman of the East India Company, Colonel W. H. Sykes Director, Francis W. Prideaux an Assistant Examiner of East India Correspondence and James Cosmo Melville a Financial Administrator, offered very little detailed information on the extent and operation of the sub-continental sugar industry. The Company had acted very differently in 1792 (chapter four above); at that time they conducted a comprehensive survey of the sugar producing districts to ascertain all aspects of the industry. Yet in the 1840s, when this industry had grown considerably, no government survey was taken, the next comprehensive survey of sugar production and marketing was in 1898.¹⁹⁹ The Calcutta Chamber of Commerce, however, did have the foresight to organise such a survey in 1846: unfortunately its results were not available until after the Select Committee had finished its work.²⁰⁰

Support with regard to the promotion or development of the agriculture of exportable commodities, was not forthcoming from the Directors in London. In 1843 for example, they refused to provide additional finance to set up experimental farms for cotton cultivation, insisting all such monies come from the already hard-pressed revenues of Bengal.²⁰¹ Sugar cultivation on a Presidency

¹⁹⁸ P.P. 1847-48 (749) XLVI.323, *Papers Respecting Distress in the British Sugar Colonies*.

¹⁹⁹ *East India (Sugar) Countervailing Duties in India. Correspondence and Act 1898 (C9267) LXVI!*

²⁰⁰ *Select Committee Sugar and Coffee*, First Report, Evidence of F.W. Prideaux p. 125.

²⁰¹ Albert Imlah, *Lord Ellenborough*, (London, 1939) p. 177

wide basis, was not seriously investigated nor did it receive a budget allocation of finance until 1886.²⁰²

This was, after all, the mid nineteenth century, and British governments did not become involved in agricultural devolvement, even when it was an important and growing primary industry, which by 1844-45 accounted for twenty-nine percent of the value of sub-continent exports.²⁰³ The mind-set of free trade, of non-interference, is obvious from the reactions of the four Company representatives at the *Select Committee*. When asked how the decline of the export sugar industry would impact on the remittance of revenue to Britain. They all spoke of the downturn as a temporary difficulty, which would be overcome by the export of other commodities, which by their own admittance were not yet apparent. Tucker was confident that the profits from bonds on Calcutta in the trade between India, China and London would prevent a large deficit in Indian trade; Sykes and Melville were not as sure of the China bond link, instead they like Mr Macawber, insisted that "something would turn up."²⁰⁴ It may well be that their seemingly flippant attitude to the financial welfare of British India was due to a total lack of consultation with them with regard to policy, nevertheless, it surely points to the existence of a fundamental problem with imperial financial structures.

The government of Bengal while not entirely indifferent to sugar producers, was nor particularly active in support of its sugar manufacturers. From 1792 to 1822, as we have seen in chapters 1 and two above, the Company government chose to be passive with regard to securing a market for East India sugar in Britain. Form 1823 to 1836 the pressure they placed on the home government

²⁰² Anonymous, First Annual Report of the Agricultural Department of Bengal, (Calcutta, 1886) chapter v, p.29.

²⁰³ *Ibid* Evidence of H. St. G. Tucker, Chairman East India Co. p. 115

²⁰⁴ *Ibid*, pp. 115-116, Melville, p. 135 and Sykes pp. 81-2

with regard to East India sugar duties was minimal. In 1840, however, they did successfully persuade the British government to reduce the British import duty on rum. Having done this, they did not follow through with practical legislation to facilitate the movement of rum within Bengal. Neither they nor the European factory owners gave sufficient thought to the question of large-scale production and disposal of by-products, despite it being self-evident that sugar could not be profitably refined without the efficient use of by-products.²⁰⁵ Senior government figures appeared to be in complete ignorance of problems with rum distilling. Tucker, and Sykes were aware of town duties levied in Calcutta, but knew nothing of the problems with the production of rum in the *mofussil*. Prideaux was aware of the situation, but he took no action to remedy it, although he expressed sympathy with those affected. The Company was obviously not prepared to enact legislative separation for rum from the abkarri duties levied on country spirits.

The centrality of capital remission to economic policy led to problems and complaints with regard to the manipulation of exchange rates and the brokerage of bills.²⁰⁶ These activities, which gave an air of hypocrisy to Company government representations before the Select Committee on any economic hardship caused by the Sugar Act of 1846. The Company's management of the economy of the Indian Presidencies had always been conducted with a view to its own agendas, a subject of complaint from private merchants for many years. Lord Ellenborough, Governor General 1842-44, expressed concern at the lack of fiscal direction, at attempts by officials to obscure government receipts and

²⁰⁵ *E.I.S* App. 1, pp. 2-42 passim, Report of the Committee of Warehouses 1792. This committee strongly impressed upon the directors that rum distillation was imperative to the growth of a European sugar industry. See also Select Committee of The House of Lords; (1840), p. 68 Evidence of Andrew Sym, planter.

²⁰⁶ Select Committee 1847-48 First Report p. 83 The Company rupee 1846-48 had an exchange rate in the range 10 to 12.5 new pence sterling, the Company for hypothecation purposes, however, pegged their exchange rate at 9 new pence.

expenses, and the attitude of administrators, who often considered their Indian posts as virtually a permanent sinecure. These attitudes and the lack of coherent economic and fiscal policy led him to request the directors in 1842, to create a single office to oversee financial management of the Sub-continent.²⁰⁷ Economic management was spread among the members of the Council, no single individual guided the management of finances and expenditure; consequently policy was formulated in an ad hoc manner. He failed to gain this approval, so in 1843 he appointed a Financial Secretary, but fiscal policy continued to be a matter for the council as a whole, it could not be effectively united under this one person without the directors' approval. Consequently, economic and fiscal management continued to have an ad hoc nature until 1858.²⁰⁸ The private sector, also firmly wedded to capital remission was plagued by the lack of liquidity and dubious practises in Bengal's financial institutions. This ensured the banking and agency houses of Bengal remained inadequate and unstable. These institutions failed to promote a climate in which business activity could grow, and were particularly vulnerable in a crisis such as occurred in 1847-8. The Sugar Act of 1846 may have been the wind of change that brought down this "house of cards," but the combination of factors outlined in this and the previous chapter strongly indicate that this industry was already in a parlous state, and its collapse was virtually inevitable.

In Chapter 7 the contribution of the indigenous sugar industry and mercantile network to the capitalisation and distribution of sugar in the domestic and international sugar market will be discussed.

²⁰⁷ A. Imlah, (1939) p. 179.

²⁰⁸ *Ibid*, p. 180.

Chapter 7

The Indigenous Sugars of British India: Indigenous Merchants and the Sugar Markets of the Sub-continent 1792-1865.

The analysis of why it was that the Indian sub-continent failed to become the sugar bowl of the United Kingdom during the first half of the nineteenth century, when conditions for it to do so were ostensibly favourable, has concentrated so far on three main themes. They include the obstacles placed in the way of such a development by the nature of the British sugar market, and the disappointing outcome of attempts to introduce 'West Indian' style sugar manufacture to the sub-continent in the period between 1790 and 1810. These were followed by the failure of predominantly European entrepreneurs, operating in Bengal and Madras during the 1830s and 1840s, to sustain the manufacture of industrialised sugar, based on the mechanically powered milling of cane and, in the boiling house, on the vacuum pan and other appurtenances of contemporary technology of steam and steel. Yet the integration of sugar production in the sub-continent into the evolving world market dominated, at this stage, by the refineries and consumers of the United Kingdom and Western Europe was not necessarily contingent pre-eminently or exclusively on the successful transfer, under European aegis, of the high technology of the Western industrial revolution. In other parts of Asia, notably in the Philippine islands of Negros and Luzon, essentially pre-industrial sugar production was incorporated very profitably into the world market for much of the nineteenth century. In the sub-continent itself, as has already been made abundantly clear in previous chapters, there existed a large, pre-industrial and old established indigenous sugar industry which both predated the European ventures of the period 1790-c. 1850 and long survived them.

This chapter discusses this indigenous industry in the context both of its relation to the attempts to introduce industrial production into the sub-continent in the decades after 1830 and – crucially – in terms of its potential, in its own right, as a key supplier to the British market. In short, the chapter attempts to assess to failure of the sub-continent to become the metropole's sugar bowl in terms not only of newly introduced, 'European' systems of manufacture but also in terms of the potential of existing indigenous production. Fundamentally, the chapter argues that the single most important factor lay in the underlying difficulties inherent in re-orientating an old established production and trade in sugar to a new 'window of opportunity', a problem that was made significantly more acute by fluctuating conditions on the British market that deterred long term interest among indigenous Indian producers.

The sugar most prominent in the sub-continental export trade was not produced by European technology, but was *khandisari* sugar (see glossary page V1 for Indian terms), the best of which was white to pale yellow, with a small crystalline structure, a product of the traditional technology of the numerous *karkhanas* of the sub-continent. This indigenous product was manufactured in sufficient quantities to supply the caravan routes to Persia and those passing over the Hindu Kush to central Asia and customers in the sub-continent itself. In addition, *khandisari* sugar, a fine grained sugar that dissolved so readily in a hot cup of tea, became the "refined" sugar of the British lower middle class and artisans, and would continue to do so as long as colonial sugar refined in Britain remained expensive.

The export of Asiatic sugars to Britain and the European continent began early the seventeenth century, through the agency of the Dutch East India

Company (VOC), which began to ballast their homeward bound ships with sugar from southern China.¹ Technological changes to Asian sugar production, such as the development of two-roller vertical crushing mills and improved methods of clarifying and claying of sugar, had led to a greater availability of clean pale coloured sugar.² In the sub-continent, however, a much earlier technology, the *kolhu* mortar and pestle cane crushing mill continued to be widespread; as did the practise of cleansing molasses from the sugar with aquatic weed or wet rags (see Appendix 3). The shipments of Chinese sugar to Amsterdam began in 1622; unfortunately, the sugar carried in this first export phase was frequently damp and tended to deliquesce (liquify) on the voyage to Europe.³ By the late seventeenth century, however, drier sugars became available in China, which led to the commodity featuring frequently in VOC cargo manifests. Exports of which reach there highest point in 1742 and 1749. The Dutch preferred Chinese to Bengali or Siamese sugar because they considered it to be higher in quality. Sugar imports to Amsterdam took three forms, powdered, crystalline and candy; it was value added in Dutch refineries.⁴ By 1637, the English also became involved, when four vessels, the first China fleet of the English East India Company, loaded 1,750 tons for the London market.⁵ Chinese sugar as a ballast cargo in English East India Company ships continued until the early eighteenth century.⁶ From this time, however, the Company no longer carried sugar ballast on the return leg from Canton. British involvement in the sugar trade in Asia did not cease; instead, it

¹ Sucheta Mazumdar, *Sugar and Society in China: Peasants, Technology and the World Market*, (Cambridge, Mass., 1998) Chapter 2 passim

² *Ibid*, pp. 166-8.

³ *Ibid*, p. 87

⁴ *Ibid*, p.85.

⁵ *Ibid*, p.100.

was now loaded as ballast in British owned Country ships, to stabilise them of their return trip to India after discharging Indian produce in Canton (chapter 1 above).

The importation of fine Asian sugar to Britain (sometimes called cured sugars to differentiate it from clayed sugar produced in the Caribbean plantations) was resumed in 1791. Although this sugar initially serve as feedstock for refineries, the E. I. Company came to understand that this fine clean sugar could be sold more profitably as grocery sugar; it was, as Noel Deerr describes, "khandisari sugar: fair and dry loaf sugar suitable for use in tea."⁷

The Sugar Market of Northeast India and the Capitalisation of Raw Material 1792-1835.

In chapter 5 above, it was explained that during the period 1785 to 1810 those seeking to introduce West Indian sugar making techniques or, from 1828 to 1850, to manufacture industrialised sugar, did not find in India a *tabula rasa* on which to create a sugar industry. Instead, they found a sugar industry of ancient origin, and a well-established trading network dealing in sugar and sugar by-products. It has also been pointed out that in the sub-continent, there existed a difference in definition of a sugar plantation and a sugar planter when compared with other sugar producing regions. A consequence of this was the manner through which raw sugar fed into the sugar manufacturing industry of the sub-continent, was also very different from that of the West Indian plantations.

Well before the East India Company began to show interest in carrying East India sugar to Britain as ballast in the early 1790s, a thriving regional and

⁶ *E.I.S* App. 1, Report of the Committee of Warehouses, 29-2-1792, p. 12. The East India Company 1664-1671 imported some 150 tons of sugar from Bantam, Benjar and from Masulipatam (Bandar) in Madras province. The Company also imported some sugar from the sub-continent 1705-1712.

⁷ Noel Deerr, *History*, Vol. 1 p. 55.

export market was already in place, served by merchants expert in finding outlets for sugar in central or Western India, Kashmir, the regional markets of Bengal and, the Calcutta export market. The Company's hope of easily securing dry sugar for ballast, however, was partially frustrated when it was discovered that production of fine *khandisari* sugar was quite limited. Consequently, competition for this *khand* and the better grades of the coarser *shakker*, tended to be quite intensive, particularly during the 1790s. Indigenous merchants, the East India Company's agents and private European merchants all sought to purchase this sugar, a level of competition that tended to enhance prices. In 1791 for example, good quality *khand* cost around £26 per ton, but by 1792, vigorous competition forced the Company's agents to pay £32 per ton.⁸ The shortage of export quality sugar, however, could not be easily overcome. As shown in chapter six above, the ability of cultivator-manufacturers to respond quickly to increased demand was limited by their need to grow food grains for familial survival and the availability of working capital to grow a capital intensive crop of cane. (The definition cultivator-manufacturers is used here because they grew the cane, crushed it and boiled it to raw sugar in the cane field or nearby village). Consequently, the demand from the burgeoning export market was met by diverting fine sugars from the internal market, and not through increased cane cultivation.⁹

With regard to the sugar trade within the sub-continent during this period, there is at present no consistent account. C. A. Bayly¹⁰ has comprehensively

⁸ *E.I. S.* App.1 p. 70, Bengal Public Consultations, Board of Trade to Governor General in Council 15-8-17920.

⁹ *Ibid.* p. 71.

¹⁰ C. A. Bayly, *Rulers, Townsmen and Bazaars: North Indian Society in the Age of British Expansion 1770-1880*, (Cambridge, 1983), and "Indian Merchants in a Traditional Setting: Banaras, 1780-1830," pp. 171-193, in Clive Dewey and A. Hopkins, (eds) *The Imperial Impact*, (London, 1978),

explained the structure of Indian merchant families and the many aspects of the workings of the internal market; and his work has proved invaluable to the writers' understanding of the subject. However, in order to reconstruct sugar production and the way in which it passed through the internal market system, the writer has drawn directly on the records held in the Oriental and India Office Collection of the British Library.

The regional sugar market was both long established and resilient, as the Company must have been at least partially aware. Because before it became directly involved, the E. I. Company's trade networks had reached deep into northeast India since obtaining the "Dewani" in 1765. Company agents dealing in textiles and other goods, were sources of knowledge of all the various commodities passing through the regional markets. In addition, the records of Company customs posts (chokees) at the northern and western borders of Bengal had records of the passage of sugar in and out of Bengal.

The regional markets of northeast India, however, had experienced substantial change due to the decline in Mogul authority, and disruptions caused by British conquest and the consolidation of British power in Eastern India. One significant branch of trade, that of luxury goods had collapsed, due to British action of deposing traditional rulers and dispersing their armies and entourages, effectively removing the customer base of the trade. Consequently, merchants sought and found new markets. Examples of this diversification were the merchants who linked into the commodity trade feeding into the commercial networks of the East India Company. One example was the growth of the cotton trade through Mizapore, Agra and down to Calcutta to supply the China trade. The return trade from Canton saw Chinese sugar and sugar candy and some

metals imported via Calcutta, Madras and Bombay (Chapter 1 above). On the internal trade routes, change and continuity existed side by side; the luxury trades suffered but traditional inter-regional trade in lac-dye, indigo, opium, salt and sugar continued.¹¹ This inter-regional trade carried goods over great distances, as exemplified by the merchant networks between Rohilkund and the Bengal Presidency. European merchants dominated the trade in piece goods through this region but merchants whose traditional base was Nejebabad (Najjibahad) and Chandowsy (Chandouse) and other cities in central north India were able to establish trade links through familial ties among merchants in the bazaars of Calcutta. They carried Kashmir shawls, dried fruit, horses and other many articles and returned laden with Bengali produce such as silk, silk piece goods, coarse cloth, fine sugar and jaggery (brown sugar).¹²

In the last quarter of the eighteenth century, the Calcutta market attracted increasing amounts of sugar for the export trade direct to Europe or via the east coast of the USA. For example, 18,715 maunds (approximately 518 tons) of all grades of sugar were imported via Banaras into Bengal 1787-8, this rose considerably to 101,839 maunds (3,285 tons) by 1790-91.¹³ The customs *chokees* on roads leading into Calcutta also record this increased volume, 6,406 maunds in 1785 increased to 83,383 maunds in 1789. Some 240,413 maunds of all types of sugar and by-products entered Calcutta from North-eastern India during this five-year period, 156,470 maunds or 65 percent of this sugar was *chini*, (fine *khandisari* sugar).¹⁴

¹¹ Ibid, *Rulers and Townsmen*, p. 175.

¹² Thomas Brown, *Report of the Commerce of the Ceded Provinces, Enclosed in a Letter from the Reporter of External Commerce* 20-10-1803; cited in N. K. Sinha, (Calcutta, 1970), p. 159.

¹³ *Bengal Sugar*, (1794), p. 3.

¹⁴ *E. I. S App.* 1 p. 37, Bengal Public Consultation 17-12-1790.

This information, when added to the reports sent in by District and Political officers in 1791 (below), offered the Company further insight into the nature and extent of the regional market. The agents also reported on sugar cultivation, *gur* production and the processing of fine sugar in Bengal and Bihar. The survey (as with all Indian agriculture statistics before the twentieth century, is suitable only as a guide) was conducted in some 20 divisions of Bengal and Bihar in 1791-2. The results, although wide ranging and comprehensive, gave a less than full assessment of the actual production of *gur* but were more specific on the production and exportation of *khandisari* sugar, amongst which, were *chini*, *shakker*, (similar to West Indian muscovado), and *duhulua*, a soft paste-like white sugar.

Table XV Extract from the 1792 Survey Showing the Six Major Districts Refining and Exporting Indigenous Sugars.

Amounts in cwt.		Produce of district.		Local Cons.		District Exports.	
District	Eng. Acres	Sugar**	Gur	Sugar	Gur	Sugar	Gur
Sircar Sarun	5,064	207	859	6	44	143	416
Dinagepore	6,045	550	N/A	137	N/A	413	N/A
Burdwan	8,264	1,638	6,696	N/A	N/A	1,638	N/A
Midnapore	1,134	1,023		460	N/A	564	N/A
Beerbhoom	4,847	671		168	N/A	146	N/A
Jessore*	Palms	549		N/A	N/A	N/A	N/A
Total	25,354	4,638	7,555	771	44	2,904	416

^{15*} Jessore mainly date tree sugar. ^{**} Sugar refers to "refined" or semi refined as opposed *gur*.

The report indicated the existence of a thriving internal market for *gur* and molasses, the latter an important part of the diet of the poorer castes as well as being distilled into spirituous liquors such as *arrack* or *toddy*.¹⁶ (S. H. Robertson, a Bengal sugar planter of the 1840s, when discussing the extent of the molasses trade, remarked on the large number of riverboats loaded with pots of molasses stacked in tiers plying the river system of Bengal).¹⁷ A disappointment to the

¹⁵ *Ibid*, pp. 180-2, Bengal Public Consultations, Abstract Statement of Sugar and Gur production in Bengal 1792.

¹⁶ *Ibid*, p. 41, From 1781 to 1787 3,831,928 pots of gur and molasses and 327,659 factory maunds of shakkar passed through the Calcutta customs houses from the upper provinces.

¹⁷ S. H. Robinson, *Planter*, (Calcutta, 1849), pp.195-6.

Company was the availability of only 3,000 tons of *khand* for the export market. Despite increasing demand from the Calcutta market since 1781, production was apparently stagnant.

This internal market was well serviced by merchants and middlemen variously called *pykars*, *beparis* and *dallals*, along with *Kharkhanedars* (the proprietors of indigenous refineries), the latter often merchants or cultivators who owned much larger acreages than the average *ryot*. Sugar dealers could be seen actively operating at large seasonal sugar markets such as Goragaut, or markets that dealt in a wide range of commodities (see map page 281).¹⁸ The sugar they purchased often travelled considerable distances, *chini* or *shakker*, for example, purchased at Goragaut was sold in the bazaars of Dacca or Naraingunge,¹⁹ a trade impossible without *hundis*, or bills of exchange backed by *shroffs*, Indian bankers or moneylenders. The report also recorded the towns that were traditional regional export centres. Maldah, for example, produced *shakker* almost entirely for the Calcutta export market.²⁰ Rungpore, a manufacturing centre for both *chini* and *shakker*, sent sugar to the export market of Calcutta, or along the internal trade routes to Moorshedabad and Dacca.²¹ The Commercolly district produced *gur* which was exported to Calcutta, Patna and Moorshedabad, while *shakker* and *chini* refined in Patna and Moorshedabad, was sold for consumption in Commercolly.²² Tirhut was another link in the internal market, the district supplying Patna with locally produced and Gorakhpur *gur*, while importing

¹⁸ *E. I. S.* App. 1 pp. 135-159 passim.

¹⁹ *Ibid*, p. 139 Bengal Commercial Consultations 1-3-1793, Letter from Commercial Resident Dacca.

²⁰ *Ibid* pp. 145-148, Letter from G Udney Commercial Resident at Malda 18-2-1793.

²¹ *Ibid*, pp. 168-170, Letter from Resident at Rungpore 24-11-1792.

Nineteenth Century India



The locations of place names on this map are intended only as a guide to the reader.

khand from Patna and Banaras.²³ The Ramghur district made and consumed its own *gur*, but it too received *khandisari* sugar, from Banaras, Burdwan and other centres.²⁴ The Burdwan district, traditionally a centre for good quality *khand*, was by 1792 exporting *shakkar* and *chini* to Calcutta, Hooghly and Channock.²⁵

As has already been discussed, the internal trade of the sub-continent was of great antiquity, but sugar as a commodity in this market, was perceived by the merchant community as high-risk; those participating required sufficient capital reserves to cover a number of potential risks, as will be shown below. The risks were such that they deterred some merchant families; particularly long established ones, who had learned through experience that other commodities offered more security. An exception to this were recently established merchants attempting to rapidly increase the turnover and influence; to these, sugar offered a risky but potentially highly profitable branch of commerce; a few good seasons of high profits allowed these newcomers to quickly accrue liquid assets.²⁶

Gur, was a commodity produced by thousands of small-scale cultivators-manufacturers and processed through many *karkhanas*, the latter often producing less than 30 tons each season.²⁷ To profitably operate in this environment a wise sugar merchant sought to do two things, minimise exposure to losses and ensure supply sufficient to fulfil market obligations. To do this they vertically integrated; i.e. took control of the commodity from the point of cultivation through to the point of sale. In this way, they prevented the sugar from entering the market system

²³ *Ibid*, pp. 163-4, Letter from Collector Tirhut 13-12-1792.

²⁴ *Ibid*, p. 170, Letter from Collector at Ramghur.

²⁵ *Ibid*, p. 172, Letter from Collector at Burdwan 2-12-1792.

²⁶ C. A. Bayly, *Rulers* (1983) p. 399.

²⁷ J. H. Mackintosh, *Report on the Settlement Operations in the District of Azamgarh*, (Allahabad, 1881), p. 6. There were 1,567 indigenous refineries in this district producing an average of 28 tons. See also W. W. Hunter, *A Statistical Account of Bengal Volume XII*, (London, 1871). In the Sasseram sub division of the Shahabad district at Nashganj there were 42 refineries producing 55 cwt of sugar each per season.

The E. I. Company, despite toying with concepts such as import replacement and enhancing the economics of the agricultural sector of Bengal, had a more mundane aim, to obtain sufficient high quality sugar for ballast purposes. What ensued, was a struggle between the Company and independent merchants, British and foreign, to obtain relatively small quantities of sugar as profitable ballast. The Company, as shown in chapter 4, did little to actually increase production of *Khandisari* sugar, despite strong demand and short supply. Moreover, high import duties in Britain and high transport costs ensured that even the best quality *khand* could not be guaranteed to show a profit when offered at the Company's sales in London. In 1794 and 1795 for example, losses were made despite the high prices of sugar in London, almost certainly due to much of the sugar being poor quality *shakkar* or *khaur*. A few years earlier in 1792, a break-even point for sugar exports had been calculated at £54.80 per ton in London, to achieve this, the 'free on board' price in India had to be £21 a ton,²⁸ but the vagaries of costs in Bengal made such calculations problematical. In 1800 for example, despite paying £21.80 in Calcutta, the consignment lost £19.25 per ton.²⁹ The transport component suggests the sugar was exported to Britain in the holds of expensive Indiamen, as opposed to the cheaper extra ships. By 1794, however, it was already becoming increasingly clear that only fine *khand* offered any prospect of profit. When sold to the wholesale grocery sector it was worth from £72 to £99 per ton.³⁰ Yet, despite these seemingly high prices, between 1800 and 1821, with the exception of 1813 to 1815, all sugar landed in London made a loss, often in excess of £20 per ton. The problem were two-fold,

²⁸E. I. S. App. 1 pp. 71-2 Bengal Commercial Consultations 4-9-1792, Letter From Board of Trade Calcutta to Directors India House London.

²⁹Ibid, App. IV p. 34.

³⁰Lowell J. Ragatz, (1928) p. 358.

the continued purchase in India of poor quality sugar and the high cost of cargo on the Company's chartered vessels (see Appendix 1, Table 44 for a break-down of cost through this period).

From the end of the India monopoly in 1813, vessels loading sugar in India ports began to increase in number, but the by now almost exclusively indigenous sugar industry, found it difficult to meet this increased demand. As explained above, cultivator-manufacturers did not possess working capital, but relied on cash crop advances from sugar merchants or *kharkhanedars*. Consequently, as the table below indicates, it was 1819 before a significant increase in exports to the British market occurred.

Table XV1 East India Sugar Retained for Home Consumption, 1814-1825

Year	Total Imports	Retained for Home Consumption.
1814	2,492	2,499
1815	6,282	2,252
1816	6,382	1,699
1817	6,295	1,366
1818	8,120	1,253
1819	13,861	5,002
1820	13,611	4,240
1821	13,458	6,010
1822	11,318	6,854
1823	10,979	5,145
1824	13,592	7,634
1825*	7,300	5,360 ^{31 32}

During the ten-year period post monopoly, the indigenous sugar industry, given a couple of years in which to increase cane cultivation, proved capable of producing significant export tonnages. From 1793 through to equalisation of duties in 1836, however, the export market to British and European destinations continued to be unstable and unpredictable. Consequently, the Indian merchant capitalists perceived the export sugar trade to Europe and North America as risk

³¹*E.I.S.*, App. IV p. 4, Customs House Report of Sugar Imported into Britain 1792-1822.

³² P.P. 1829 (319) XVII. 369: Account of Quantities of British Plantation and Foreign Sugar Imported and Exported from GB 1819-1828.

prone. The traditional markets of Bengal, central India and the caravan routes through Persia and the Hindu Kush, offered greater price stability.

Despite the ability of the indigenous sector to produce considerable amounts of sugar, European merchants seeking sugar for the British market were either unwilling to risk capital investment or did not fully understand the need to inject capital into production at grass roots level. In 1823, as discussed in chapter 2 above, a 'window of opportunity' came into being to supply a virtual quota to the British market. British merchants, however, having failed to establish a secure relationship with indigenous sugar producers, were purchase sugar in Calcutta at sustainable prices. Had such an arrangement been in place, it may have ensured *khand* a stronger place in European markets and, even allowed it to compete successfully with Chinese and Batavian sugar in the markets of the Arabian Peninsula, Persian Gulf and East Africa. The formation of such a relationship, however, required an investment by Europeans in cash crop advances and perhaps in building and financing sugar production in *karkhanas*, rather than investing in West Indian technology.

Table XV11 Value of *Chini*, Crystalline Brown and Date Tree sugar, Calcutta 1812-1821

Year	<i>Chini</i>		Brown		Date		Sugar	
	Low	High	Low	High	Low	High	Low	High
1812 Jan	£21.8	£23.4	£20.6	£21.4	£18.2	£21.4		
1813 Dec.	27.0	27.6	23.0	23.8	20.6	21.4		
1814	28.9	29.8	27.4	28.2	24.5	25.7		
1815	29.2	29.8	24.8	26.5	23.3	24.2		
1816	32.6	33.8	30.6	31.6	26.5	27.4		
1817	33.2	34.3	30.5	31.3	29.2	30.0		
1818	32.6	34.3	29.8	30.5	28.2	28.4		
1819	34.0	34.8	30.8	31.6	27.8	29.0		
1820	34.5	35.3	30.8	32.5	27.06	28.05		
1821 ³³	32.8	34.0	29.0	29.70	21.3	22.6		

The failure of British merchants to invest in the production of raw sugar or to establish a cooperative arrangement to facilitate movement of sugar from the cane field to the export market ensured the price of indigenous sugar increased in

tandem with export demand. This is illustrated in the above table, which shows that the price in Calcutta increased by over £5 per ton when the monopoly was removed and demand increased. The restrictions placed on the trade by import duties and economic policies in Bengal, ensured that *khand* would not be integrated into a world market 1790- 1835. However, shortly after the equalisation of duties on "British plantation" sugar in 1836, indigenous sugar became the largest component of sugar exports from the sub-continent to the British home market, and would remain so for over a decade.

The Availability of *Khand* 1836-1865.

The long awaited equalisation of sugar duties came in July 1836, the actual change being kept secret until the Chancellor announced it in the House of Commons (prior notification, would almost certainly have seen large fluctuations in sugar prices). Consequently, indigenous sugar makers, merchants and Indian capitalists, had no immediate opportunity to stimulate cane cultivation.³⁴ In the sugar growing regions of Bengal, Bihar and the NWP the cane-planting season varies, it is usually February to March around Shahabad, and as late as April in lower Bengal. The news of the duty change, however, probably reached India in August, by which time the planting season was over and any increase in cane crops, was impossible that year. The industrialised sugar sector in 1836, as discussed in chapter 4, was still quite small. Consequently, most of the initial increase in production had to be met by the indigenous industry. However, a period of time was required to find additional investment capital, or for the *ryots* to

³³ E I S App. IV pp. 35-36.

³⁴ Two petitions were put before the House of Commons in 1836, praying for the equalisation of sugar duties, one on March 25th 1836, *Parliamentary Debates* Vol. 32 (1836) pp. 591-2 and Vol. 33 p.471-2. When the Chancellor announced the change 22 June 1836, members representing both the East and West Indian interests did not appear to have any prior knowledge, see *Parliamentary Debates*, Vol. 34, (1836), pp. 724-746, *passim*.

substantially increase cane crops, and *karkhanas* to expand facilities; response was slow, pre-industrial production is not attuned to rapid changes.

The indigenous industry respond fairly quickly, but much of the initial increase in sugar exports to Britain post 1836 would not be through increased production but by diverting sugar from other export markets. For example, exports by sea 1833-38, to France, United States of America, the Red Sea, Persian Gulf and East Africa had been around 6,000 tons, and predominantly of *khand* or good quality *shakkar*. Exports from Calcutta to Britain were quite small, 1,554 tons in 1834 and 2,435 in 1835. From 1836, exports increased to 7,523 tons and increased further to 28,401 tons by 1840.³⁵ During 1846-7, the combined total of indigenous and European produced sugar reached 82,021 tons, of which some 45,000 tons was *khandisari* sugar. Exports from Calcutta to non-British destinations fell to only 1,200 tons per annum between 1840 and 1847.³⁶

Not only were sea-borne exports redirected, so was much of the sugar coming into Calcutta market: sugar from the Azamgarh district, one of the major contributors to exports immediately after equalisation. Initially, sugar coming to Calcutta from Azamgarh was financed with European capital to the extent of Rs.1,900,000, indigenous merchants provided only Rs.350,000.³⁷ Between December 1836 and November 1837, virtually all of the 7,413 tons of the districts fine *khandisari* sugar exported via Calcutta, was redirected from the internal markets. As shown in chapter four, at the cessation of Company purchases in 1831-2, Azamgarh sugar was redirected via Mizapore to Central India and the Western Provinces. Post 1836 it was once again redirected, this time back to the Calcutta

³⁵ *Select Committee Sugar and Coffee, First Report*, Evidence of John Bagshaw M. P. p. 32.

³⁶ *Ibid*,

³⁷ Anonymous, *Chuklah Azimgurh*, (1837). p. 7, Paragraph 18.

export market.³⁸ The increases in production capacity in the Azamgarh region 1832-1836, was entirely due to the increased demand from the domestic markets. In 1836-1837, the region produced 57,778 tons of *gur*, which when processed through local *karkhanas*, produced some 14,447 tons of fine sugar and 5,800 of *shakkar*, all of which went to the Calcutta export market.³⁹

These figures are indicative of the strong demand from the British grocery trade (see below), and the impact of the lower import duty post 1836; this ensured that *khand* offered as good or perhaps better return to East India merchants, than industrialised sugar. Good profits from *khand* exports saw British merchants active in the export of this sugar. Arthur Crooke, for example, was involved in both the production of industrialised sugar and the export of *khand*.⁴⁰ Andrew Sym and a few other Europeans even produced *khand* for export.⁴¹ *Khand* was not processed into industrial sugar, but exported to Britain without value adding.

The Industrialised sugar makers, as with their predecessors, do not appear to have been extensively involved with the capitalisation of raw *gur* through vertical integration. As in the earlier period, Indian capitalists provided much of the capital to indigenous merchants who channelled it into cash crop advances to the cultivator-manufacturers. Often the same merchants owned and marketed the produce of the *karkhanas* and dealt in raw sugar through the internal market and for export via the industrial sugar factories.

Equalisation in 1836, for the first time since the mid 1790s, offered a degree of surety to East Indian sugar exporters. Indigenous merchants and

³⁸ Ibid, p. 5, paragraph 9.

³⁹ Ibid, p. 4, paragraph 7.

⁴⁰ *Select Committee Sugar and Coffee 1847-48* First Report p. 17.

⁴¹ *Report from the Select Committee of The House of Lords Appointed to consider of the Petition of the East India Company for Relief*, (1840), Minutes and Evidence p.67 Evidence of Andrew Sym, sugar planter Padruana. Sym exported *khand*, which he purchased from local *Halwais*

capitalists, however, thinking of substantially increasing capital investments with - manufacturers, must have had some reservations, since the trade had long been inconsistent. Capital investment, however, was not just a question of providing cash crop advances to cultivator-manufacturers; merchants were also the proprietors of the *karkhanas* that processed the *gur* into *khandisari* sugar. An example of this was Dip Chand Sahu of Azamgarh.⁴² Another merchant family heavily involved in the sugar trade was the Banaras firm of Moti Chand Gupta. In 1840, this family business moved from Azamgarh to Calcutta, where sugar became one of the firm's main trading commodities.⁴³ Bangshi Badan, called Sadhu Khan, a merchant in the Jessore area, was another with a considerable stake in the export of sugar via Calcutta 1840-1860. He owned several *karkhanas*, controlled a large network of agents, paid crop advances to cultivators, and purchased raw sugar from middlemen.⁴⁴

These rich and influential merchant families, however, were not inclined to immobilise capital in crop advances unless they had previously secured sales outlets. Their market was not amongst local peasant cultivators who consumed their own *gur* or molasses, or purchased them from neighbours, they were in Calcutta, the regional markets of Bengal and central western India or through the caravan trade over the Hindu Kush to central Asia. In all four markets fine *khandisari* sugar or coarser *shakkar* found a ready and profitable market, the soft white *Duola* was usually consumed domestically by wealthy Muslims.

⁴² Anonymous, Chuklah Azimgurh (1837), p. 5 paragraph nine, He was the proprietor of the largest Khandisari in the Azimgurh area and another at Nuchaittee near Jaunpore.

⁴³ C. A. Bayly, "The Age of Hiatus: The North Indian Economy and Society, 1830-1850, in Phillips C. H and Mary D. Wainwright (eds), *Indian Society and the Beginnings of Modernisation, c 1830-1850*, (London, 1976), p. 92, and Shahid Amin *Gorakhpur* (1986) p. 36

⁴⁴ J. Westland, *Report of the District of Jessore*, (1871) p. 221, paragraph 56.

As it transpired, equalisation in 1836 proved a turning point for indigenous sugar exports; Indian merchants found that the British export market offered consistent growth. Under the circumstances they could with some assurance invest, additional capital in crop advances and build new or expand their *karkhanas*. It was a booming market, in which sub-continental merchants were in good position to profit. Bengali merchants for some years had obtained partnerships in European agency houses; they were also major stockholders in the Union Bank of Calcutta.⁴⁵ They, however, bore much less responsibility for the Bank's collapse in 1847 than its European stockholders (chapter 6 above), in the aftermath of the Bank's collapse in 1848, it was the Bengali shareholders that paid the bulk of recovered liabilities. This left a lasting impression on the Bengali merchant community of them facing up to their financial responsibilities, while European stockholders escaped very lightly.⁴⁶

With regard to the export sector, the Indian merchants' role was more direct than in the earlier period. They were no longer just *Banians* (bankers and facilitators of business between Indian and European merchants);⁴⁷ they exported sugar to Britain as merchants in their own right, or in European terms "on native account" (Indigenous capital invested in commodities but exported via European mercantile houses).

⁴⁵ Blair B. Kling, *Partner in Empire*:(1976), p. 75. Between 1830 and 1855, many Bengalis became involved commodity exports via the British mercantile system. Most prominent among them were Dwarkanath Tagore, Motilal Seal and Ram Gopal Ghosh, al senior partners in Agency Houses. Such houses as Anglo-Indian establishments would not have been perceived as trading on *native account*. Prajnananda Banerjee, *Calcutta and Its Hinterland –A Study of Economic History in India, 1833-1900*, (Calcutta, 1975), offers a detailed description of Indian companies and their proprietors during the first half of the nineteenth century, see chapter V, pp. 139-166 passim.

⁴⁶ Blair B. Kling, *Partner*, (1981), pp 221-223: for many years after the collapse Bengalis withdrew from mercantile activity in conjunction with British merchants.

⁴⁷ See Dilip Basu, "The Early Banians of Calcutta. The Setts and the Bysakhs in their own Image", *Bengal Past and Present*, vol., XC, (Jan-June, 1971) pp. 30-46, and "The Banian and the British in Calcutta, 1800-1830, *Bengal Past and Present*, Vol., XC11 Part 2, (July- December, 1973) pp. 157-170.

In Madras too, there was a similar trend, Indian merchants exported brown indigenous sugar, often purchased direct from *kharkhanedars* or from cultivator-manufacturers. They would, however, have only a brief period of sunshine. Instability, so often a feature of the East India sugar trade, once again became manifest from 1846-7, driven by speculation surrounding possible demand from British brewers and distillers (Chapter 3 and 6 above).⁴⁸ It was almost certainly this speculation that caught out Shui Sahai, a sugar merchant of Ghazipur and Azamgarh. He bought heavily into sugar in the late 1840s, a speculation that ruined him and many of his financial backers, amongst which were some wealthy merchants and landed families.⁴⁹

Before instability again became manifest, some Indian merchants and capitalists were able to take a measure of control of both production and prices. This was certainly the case with regard to *paka khand* produced from the sap of the wild date tree or sugar cane, and the many forms of indigenous sugars, which came down the rivers of Bengal to Calcutta from sugar producing districts such as Shahabad, Patna, Azamgarh and Jessore.⁵⁰

From the mid 1840s, indigenous merchants in and around Jessore began to play a more prominent role in the production and supply of fine sugar to the British market. This development did not please the management of the Gladstone-Wylie factory in Jessore, who had found a plentiful and cheap source of raw sugar in the shape of *gur* from the local wild date palms. Such competition

⁴⁸ *Select Committee Sugar and Coffee*, Third Report, p. 28, Evidence of John U. Ellis, partner sugar refinery Madras.

⁴⁹ J. H. Mackintosh, *Azamgarh*, (Allahabad, 1881), paragraph 500 p. 146

⁵⁰ *Select Committee Sugar and Coffee*, First Report p. 181, Evidence of Nathan Alexander, East India merchant. The witness claimed that of the 67,000 tons of sugar exported from India to Britain in 1847, only about 20,000 tons was produced in the European owned factories. Arthur Crooke First Report p. 20, also confirms this giving the proportion of fine sugar produced by indigenous refineries as two thirds of the total export.

brought increased production costs and coincided with John Gladstone's attempts to sell his factory. It is tempting to speculate that a person as well connected politically as Gladstone, might have heard a whisper of the changes to legislation of March 1845. Just prior to this he offered to sell his factory to the Dhobah Company, an offer they felt disposed to decline.⁵¹ Gladstone also corresponded with another sugar producer in Jessore, Henry Mackenzie, seeking his support for a proposal to bring "order" to the way in which factories purchased raw material.⁵² Was it inside knowledge or simply palm *gur* appreciating in price that prompted this flurry of activity by Indian merchants vigorously purchasing palm *gur* at the sugar marts of Kotchandpur, Chaugachha, Jingagachha, Trimohini, Keshabpur and Khajura. At these markets, they outbid Gladstone's agents and redirected the date *gur* to be processed in the *karkhanas* of Jessore,⁵³ where they produced soft *duhulua* sugar for domestic consumption and fine *pakka chini* for export to Britain or via the caravan trade.⁵⁴ Their advantage over the European factories lay in their low cost infrastructure, the ability to fall back on the domestic and the caravan trade, and more importantly, the profitable disposal of by-products.

The actual amount of sugar manufactured by the indigenous industry, although ultimately impossible to quantify, was considerable. In addition to the Calcutta export market, large amounts of fine sugar were sold via the markets of Western, Central and Northern India and in central Asia. Transactions on this long distance trade were made possible by bills of exchange that underwrote

⁵¹ S. G. Checkland, "John Gladstone," (1954), p. 228

⁵² *Ibid.*

⁵³ J. Westland, *Jessore*, (Calcutta, 1871), p. 222, paragraph 58.

⁵⁴ W. W. Hunter, *A Statistical Account of Bengal Volume 2, Districts of Nadiya and Jessore*, (London, 1875) p. 291.

most of the trade of the Indian mercantile network.⁵⁵ Something of the scale of the overland markets is indicated by the returns of the customs post on the north and western borders of Company administered territory. For example, in 1843-1844, 42,095 tons of fine sugar passed through, 38,405 tons in 1844-1845 and 48,000 tons in 1845-1846.⁵⁶ Nathan Alexander, a long-time East India merchant, predicted that this trade would continue to increase. His claim, somewhat premature as it transpired, was based on an improved trading environment and greater economic stability had been achieved through the victory of British forces in the recent war with the Sikhs--the treaty Dalhousie had struck with the Sikhs in 1846, did not bring lasting peace. This was not achieved until British forces commanded by Gough won a decisive victory at Gujarat in the second Sikh war in March 1849.⁵⁷ The fine sugar that passed through these inland customs posts had a value of £26.60 per ton, indicative of the overland export market being as lucrative as the export market via Calcutta.⁵⁸ Where Banaras *khand* was worth £24-26 a ton 1845-1846 and £21.60 per ton in late 1847;⁵⁹ these prices are indicative of the difficulties involved in redirecting *khand* to the new 'window of opportunity.'

The capacity of Bengal and the Gangiatic valley to produce a considerable volume of sugar is evident from the figures above. An average of 42,833 tons per annum went through the customs posts on the land borders of British India and 61,925 exported overseas via Calcutta 1844-1846, a combined average of

⁵⁵ Rajat Kanta Ray, "Asian Capital in the Age of European Domination: The Rise of the Bazaar, 1800-1914," *Modern Asian Studies*, 29, 3 (1995) pp. 449-554. Well into the nineteenth century the caravan routes over the HinduKush mountains to Russian Asia and through the Gobi desert to China and the overland trade links to Kabul, Bokhara and Astrakhan, were all financed by the Indian bill of exchange, the Hundi, underwritten by the Shroffs of bankers of the sub-continent. p. 472

⁵⁶ *Select Committee Sugar and Coffee*, First Report, p. 169, Evidence of N. Alexander.

⁵⁷ Stanley Wolpert, *A New History of India*, Fifth Edition (Oxford, 1997) pp. 222-225 passim.

⁵⁸ *Select Committee Sugar and Coffee* First Report, Evidence of N. Alexander p. 169.

104,758 tons per annum.⁶⁰ As shown in (Chapter 3 above), some 40,000 tons of *khand* per year was exported from Calcutta to Britain at the high point of exports, and virtually all of the sugar exported overland was of similar quality, indicating that some 77,000 tons of *khandisari* sugar was exported from the region each year. In addition to this was Sugar candy, shakkar and raw *gur* consumed within North-eastern India, molasses consumed with a variety of food grains, alcoholic drinks such as toddy or arrack distilled from the molasses of palm or cane sugar and canes consumed by chewing. This indeed, was an industry producing a great deal of sugar and other products for domestic and export consumption; such an industry had a considerable mercantile infrastructure, to which we now turn.

The Kharkhanas and the Internal Market.

An important dimension of the dynamics of the attempts to integrate Indian sugar production into the British domestic market was the strength and resistance of sub-continental merchant communities, which had to be subjugated or brought into collaborative arrangements if these attempts were to succeed. The longevity of the internal sugar market and ability to sustain itself during a long period of adverse trading conditions has already been shown (above). Yet despite an indifferent relationship with Europeans in government and trade, indigenous capitalists and merchants were able during the period of exponential growth in sugar exports 1838-46, to capitalise the production and organise the distribution of, virtually all raw and *khandisari* sugar for export and internal markets.

That this could be achieved, suggests that sub-continental merchants and their mercantile infrastructures were sophisticated, organised, and able to operate over vast distance. They were not, (as Niels Steengaard has suggested), a

⁵⁹ *Ibid*, p. 174.

peddling trade.⁶¹ Instead, the sub-continental network was a branch of commerce with an infrastructure as sophisticated as that of pre-railway nineteenth century Britain, but with an infinitely larger market to service.

This was evidenced (above), by the large amounts of cane boiled to *gur* by the cultivator-manufactures, and the thousands of tons "refined" into *khandisari* sugar by an indigenous industry comprised of small establishments, the production of each just a few tons per season (above). The raw material used, as was the case with that processed into industrialised sugar, often suffered from the damage inflicted upon it in the initial slow process of expressing juice from the cane, and suffered further damage when boiled to *gur*.⁶² This pre-industrial industry bears no comparison with the contemporary British refining industry,⁶³ which in the 1850s, was increasingly turning to vacuum pan technology. Instead, the *karkhanas* were equipped with open pans, and implements and methods used for millennia (see Appendix 3). The raw material processed came from many small-scale cultivation-manufacturers spread through the sugar producing regions of northeast India. The *khand* after processing was transported to its exit ports on bullocks, riverboats or overland on the caravan trade.

The primary medium via which the industry distributed large quantities of sugar was the river system, down which the riverboats delivered raw or refined

⁶⁰ *Ibid*, Evidence of John Bagshaw M P. p. 32, and Nathan Alexander, Merchant pp. 169-70.

⁶¹ Niels Steengaard, *Carracks, Caravans and Companies: The Structural Crisis in the European-Asian Trade in the Early Seventeenth Century*, (Copenhagen, 1972), pp. 22-59 passim.

⁶² *E. I. S* App. 1, pp. 210-215. In 1797, William Fitzmaurice wrote a memorial explaining indigenous sugar making methods. His chief criticisms were; the fermentation of expressed cane juice due to slow methods of extraction, the almost complete lack of filtration or defecation and the frequent boiling at temperatures that caused further damage and inversion in the sugar. . The Indian Sugar industry Khan Bahadur S. M. Hadi (Bhopal, 1929), pp.34-5. The problems associated with juice extraction, defecation and the boiling of cane juice, were in 1928 still serious problems in the sub-continent.

⁶³ J. M. Hutcheson *Notes on the Sugar Industry of the United Kingdom*, (Greenoch, 1901) p. 19-60 passim. Virtually all of the 72 British refineries were situated in London, Liverpool Bristol or on the banks of the River Clyde in Scotland, and drew their raw material from nearby bonded warehouses see also Robert

sugar to riverine commercial centres. From these centres sugar passed to other smaller internal markets or on to the export market of Calcutta. The railway network would be put in place later in the century, but prior to this development, riverboats were the linchpin, carrying sugar to the market place, and on the return trip to the sugar growing districts, carrying food, manufactured items, fuel and a variety of other commodities.⁶⁴

The Jessore region was a particularly interesting example of this trade network in action, although it was not entirely typical due the predominance of palm *gur* as the raw material. This cheap and plentiful raw palm *gur*, from the early 1840s was the feedstock for indigenous *khandisaris* and industrialised sugar processors. The source of this was the sap of *phoenix sylvestris*, the wild date tree, which drew some of the largest industrialised sugar factories to this district (Chapter 5 above). The sap of palm trees was tapped by the *ryot* who then boiled it to *gur*. The dark brown raw sugar was then sold, either directly to *kharkhanedars* or to *dallals*. In common with cane cultivators, cash advances were often paid, but were less prevalent, because *gur* derived from palm sap offered a better return than cane *gur* (chapter 6 above).

This growth in export demand of the early 1840s, led to the establishment of many *karkhanas* in the Jessore district, which frequently had a larger output than those of the cane growing regions. Many of the proprietors were affluent merchants with investment in other branches of commerce.⁶⁵ The raw material

Nichol, *Essay on Sugar and General Treatise on Sugar Refining as Practised in the Clyde Refineries, Embracing the Latest Improvements*, (Greenoch, 1864).

⁶⁴E. Alexander Compiler, (ed.) H. C. Conybeare and Edwin Atkinson, *Statistical Descriptive and Historical Account of the Gorakhpur District* (Allahabad, 1880). p. 413 and 465. W. W. Hunter, *A Statistical Account of Bengal* vol. XI (London, 1877) p 26.

⁶⁵J. Westland, *A Report on the District of Jessore: Its Antiquities, Its history, and its Commerce*, (Calcutta, 1871), p. 221 and 225. Bangshi Baden Sadhu Khan, a brassware manufacturer also owned sugar refineries at sugar market towns in Jessore and a large sugar depot in Calcutta.

processed into the exportable *paka chini* manufactured in these *karkhanas* was purchased from the middlemen or agents of the *khandisaris* at the local sugar *hats*. While the mid 1840s promised an almost limitless demand from the British market, consequently the number of palm trees was seen to be insufficient. Traditionally palms were planted at the borders of family plots or around *jeels* (small ponds or dams), but demand saw the sowing of palm plantations. New plantings, however, did not offer immediate returns, since palm trees usually take seven years to reach profitable yields.⁶⁶ Insufficient supply and rising demand, saw the value of date *gur* increase exponentially in the Jessore markets, (see map page 301) of Kotchandpur and Sulimanpur in the Western districts, Keshapur in the south, and also at Trimohini, Jingagachha and Narikelbaria.⁶⁷ The 1840s also saw Keshabpur, on the banks of the River Bhadra, become the major centre for palm sugar, large quantities of which passed through its many sugar *hats* and local *karkhanas* where much of it was processed into export *pakki chini* and transported down the river system to Calcutta. The other major product of these *karkhanas*, was *duhulua*, a soft, white paste-like sugar consumed by many high caste Hindus and affluent Moslems.⁶⁸ This sugar was loaded on riverboats and sold in the markets at Nalchiti in Bakarganj; on their return leg, they carried rice to feed those employed in growing or processing sugar.⁶⁹

The export boom of the forties gave birth to a variety of industries. At Keshabpur; for example, there were several pottery manufacturers making clay vessels for use in the *karkhanas*.⁷⁰ The industry created other spin-offs; the

⁶⁶ Colonel J. E. Gastrell, *Geographic and Statistical Report of the District of Jessore Fureedpore and Bakergunge*, (Calcutta, 1868), paragraphs 42 to 48 passim.

⁶⁷ W. W. Hunter *Jessore* (1875), p.291

⁶⁸ *Ibid*, p. 285.

⁶⁹ J. B. Westland, *Jessore* (1871), p.225 paragraph 74.

⁷⁰ *Ibid*.

demand for firewood for example, to heat the sugar pans created employment for log cutting castes in the Sunderbunds, from where it was picked up by riverboats on the return leg from Calcutta.⁷¹ By the late 1840s, Keshabpur had become the hub of a network of merchants who not only employed sugar buyers in local *hats* but also had familial ties throughout the regional trading centres of Bengal and in Calcutta.⁷² Not all Jessore sugar went directly to Calcutta via the Sunderbunds; some passed through the *gur* markets of Jingagachha and Jadapur in the Northwest. In these two centres, *beparis* (middlemen) purchased sugar and transported it to Santipur via the imperial highway. By the 1860s, they were able to use the facilities of the Eastern Bengal railway and send the sugar to Calcutta from the stations at Kishnaganj and Ramnagar.⁷³

The affluence this export sugar industry brought to Jessore during the 1840s did not continue long into the 1850s. This and the following decade saw much price volatility in the British sugar market, and the demand for, and the value of, date *khand* and *gurpatta* (crystalline date sugar) fluctuated accordingly.⁷⁴ The first half of the 1850s was a particularly low point; export tonnage from the sub-continent fell from over 70,000 tons in the late 1840s to only 15,153 tons in 1854. The situation improved a little in 1855, with 22,863 tons and in 1856 with 32,900 tons of imports.⁷⁵ These fluctuations in price and volume created liquidity

⁷¹ *Ibid*, Paragraph 74, pp. 223-5 *passim*.

⁷² C. A. Bayly, "Indian Merchants," (1978), p.178. Along the Ganges, Jumna and Goghra rivers specialised trades grew up around riverine entrepôts. These provided facilities such as boat building and servicing and insurance, as well as the services of shroffs who financed the sugar trade with funds invested by wealthy zamindars.

⁷³ J. Westland, *Jessore*, p.209.

⁷⁴ William Reed, *Sugar Yielding*, (1866), pp. 153-161 *passim*.

⁷⁵ P. P. XXXVIII (1857) Session 2, *Consumption of Tea and Sugar*, pp. 6-7.

problems amongst the sugar merchants of Jessore, particularly the smaller ones, many of whom went out of business.⁷⁶

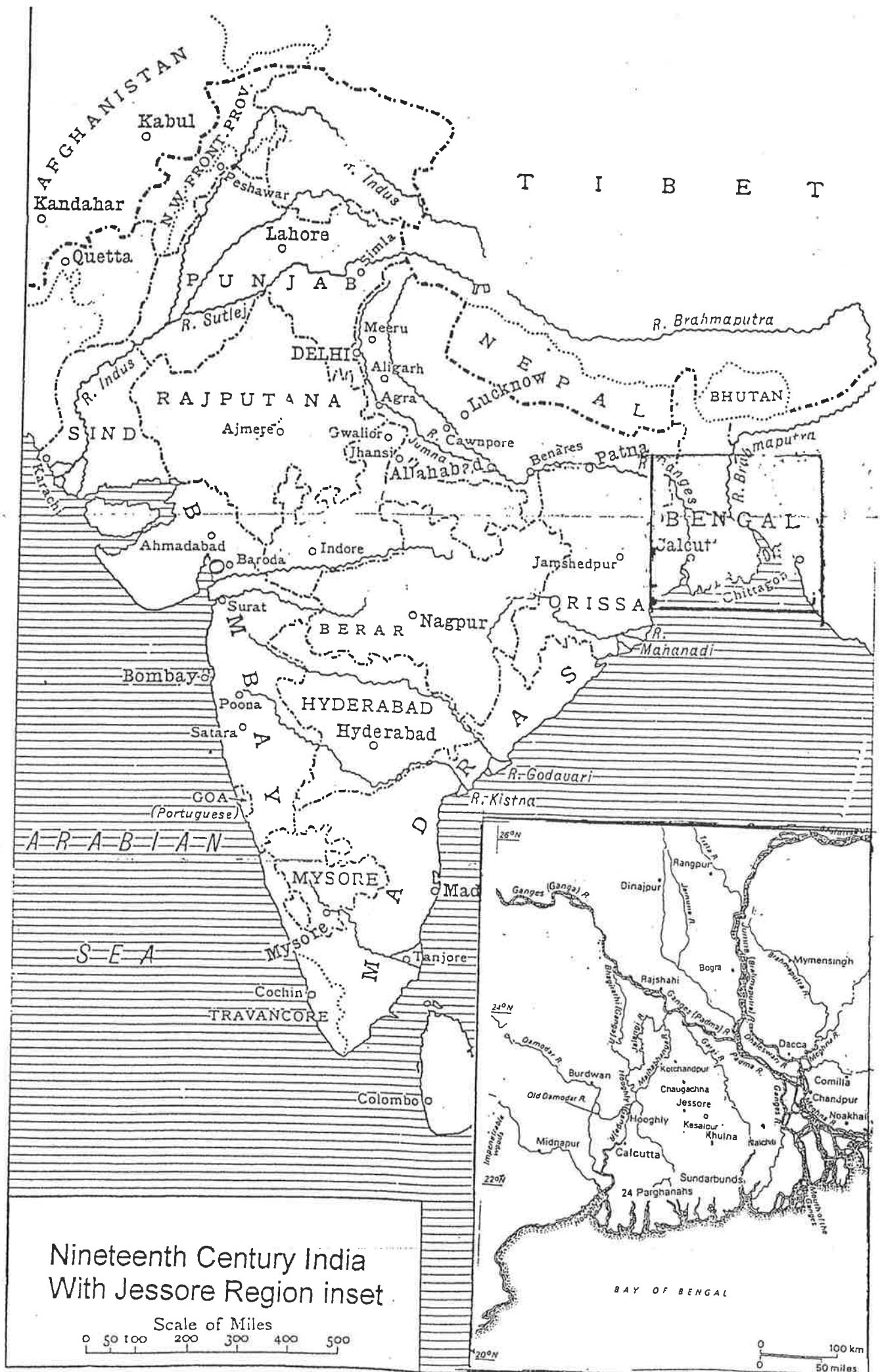
Although Jessore was an important centre of production in the 1840s, it was but one district among many others. For example, *khand* and other indigenous sugars came down to Calcutta from sugar markets and refining centres such as Mirzapur, Jaunpur, Azamgarh, Ghazipur, Banaras, Cawnpore, Gorakhpur and the towns and markets of many other sugar growing districts of the Ganges valley.⁷⁷ A great deal of the sugar from the sugar regions to the northeast of Jessore passed through the several sugar markets of the riverine trading centre of Patna, which by the 1840s had become an important sugar market and the largest trading centre on the Ganges river system after Calcutta. Patna markets specialised in specific commodities, and some handled a large throughput of raw or fine *khandisari* sugar. The Patna market was both sophisticated and structured. For example, sugar purchased upriver arrived in Patna and then progressed through a series of markets; within each separate market, *beparis* or *dallals* haggled with the *arithia*, and struck bargains when the optimum price was obtained. The latter generally acted as commission agents for larger merchants in Calcutta,⁷⁸ his function here was pivotal, for he was the facilitator of trade.⁷⁹ Frequently he had his own extensive warehouses that allowed him deal extensively in his own right or act as a stockholder for other

⁷⁶ W. W. Hunter *Bengal Vol. 2*, (1875), p. 291.

⁷⁷ Research of this commercial activity associated was gleaned from the following district and settlement reports. F. H. Fisher and J. P. Hewett, *Descriptive and Historical Report of the Northwest Provinces of India, Vol. XIV*, (Allahabad, 1884); pp.18, 76 and 102. J. H. Mackintosh, *Report of the Settlement Operations of the District of Azamgarh*, (Allahabad 1881), p. 159. Rs. 6-4. F. H. Fisher, *Statistical Report of the North-western Provinces of India, Vol Xiii part 1* (Allahabad, 1883). p. 122. E. Alexander, *Gorakhpur District*, (Allahabad, 1880). p. 413. Edwin T. Atkinson, *Descriptive and Historical Account of the Northwest Provinces of India, Vol. Vi*, (1882) p. 153. W. W. Hunter, (London, 1877), p. 26.

⁷⁸ W. W. Hunter, *A Statistical Account of Bengal Vol. XI*, p. 26.

⁷⁹ Rajat Kanta Ray, "Asian Capital," *Modern Asian Studies*, 29, 3 (1995) pp. 445-554. p. 494. The *arithia* (*arhatiyas*) and the bankers (*shroffs*) were very influential in inland trade. They controlled the flow of



merchants; in short, he was the vital link between the seller and buyer.⁸⁰ With regard to sugar exports to Britain, the *arithia* was frequently a commission agent for merchants in Calcutta; in this capacity, his primary function was to supervise weighing and dispatch of the sugar. His role in this mercantile system cannot be overvalued, for apart from mercantile activities, he also acted as agent for bankers in cities where the banker had no *kothi* (branch).⁸¹ As British exports declined, Patna gradually fell out of the export trade, and by 1870, in common with most other riverine sugar entrepôts, it served the internal market almost exclusively, with Maldah and Moorshedabad its most important markets.⁸²

The internal mercantile system of India, was serviced by merchant families, *dallals*, *beparis*, *arithia* and *shroffs*, and capitalised by the wealthy landed elites. Without the capital of the latter, sugar production in the sub-continent throughout the period 1792-1865, would have been greatly reduced. *Hundis*, bills payable on Calcutta or other large centres, provided the capital and credit to lubricate this system. These bills facilitated the passage of considerable amounts of sugar from the boiling vessel of the cultivator through the *karkhanas* and into the markets and bazaars of much of the sub-continent, and to the point of export in Calcutta.⁸³ By the late 1860s, sub-continental sugar production was predominantly for the internal market, sugar exports to Britain were declining.

the hundi, and delivery of goods at the price agreed. Any failure in transaction via the *arithia* would be covered by the *arithia*.

⁸⁰ C. A. Bayly, *Rulers*, (1983) p. 414. The *arithia* charged a relatively cheap brokerage service of around one percent to both seller and buyer. At important trading centres such as Mirzapur and Shikapur, on the borders of areas with different cultural mores and languages, the *arithia* role was pivotal. He could speak a variety of languages and was able find a way of redressing or getting round caste problems. This offered a measure of ritual security to merchants. His knowledge of customs and other information vital to merchants trading outside their own localities was usually comprehensive. Most *arithia* also carried blank customs passes and could facilitate passage through customs without great efficiency.

⁸¹ Rajat K. Ray, "The Rise of the Bazaar," (1995), p. 495.

⁸² W. W. Hunter, (London, 1877), p. 102.

⁸³ C. A. Bayly, (1983). For an explanation of *hundis* and how they operated, see pp.50-53 and 375-6. See also Prakash Tandon, *Banking Century: A Short History of Banking in India*, (New Delhi, 1989).

Decline and Stagnation 1855-65.

The decline of the export trade, particularly in the Jessore district, was quite rapid. For example, in the early 1860s Keshabpur and Trimohini had 120 and 12 *karkhanas* respectively: by 1871, there were forty in Keshabpur, most of which made sugar for the internal market, and none at Trimohini.⁸⁴ All the sugar producing districts suffered a similar decline when export demand for *khandisari* sugar reduced after the full equalisation of all sugar duties in Britain in 1854 (Chapter 3 above).

Good quality *khandisari* sugar had never been cheap; in 1847 Henry St. George Tucker, Chairman of the East India Company, said: "I do not recollect sugar [in Calcutta] being under those rates, eight rupees ten annas or £0.90 per maund, [£24 per ton]".⁸⁵ From 1846, the economics of the export trade were inexorably moving against pre-industrial fine sugars. Simply put, industrialised sugar could and did, obtain greater efficiencies due to the new technologies available to it, and began to produce a sugar comparable to *khand* but at a lower price. The *karkhanedar* was not able to increase his yield or lower overheads. The process was labour intensive and slow, due to the poor quality of *gur*, the indigenous industry tended to produce a large percentage of low quality sugar and molasses, only twenty-five percent of the weight of the raw material finished up as fine *khandisari* sugar (see Appendix 3). Production statistics from Azamgarh are indicative of this. In 1880 for example, the district produced some 1,300,992 maunds of *khand*, in so doing used 5,203,929 maunds of raw sugar, indicating

⁸⁴ J. B. Westland, *Jessore*, (1871), p.291.

⁸⁵ *Select Committee, Sugar and Coffee*, First Report, p120, Evidence of Sir Henry St. George Tucker, Chairman of the East India Company.

that only 25 percent of *gur* finished up as *khand*.⁸⁶ This low yield and the ongoing strong demand within the sub-continent, kept upward pressure on the domestic price of *khand*; in Azamgarh, 1859-60 to 1863-4, for example, the average price was £20.30 per ton.⁸⁷ The cost of this sugar when landed in Britain can be seen in table XV111 below. Strong intern demand plus that of the caravan trade ensured that the price of fine sugar remained at high. Consequently, there was little incentive for many *kharkhanedars* to attempt to supply an export market, which from 1864 saw an almost continuous decline in price.

Table XV111 Cost of *Khandisari* Sugar Landed in Britain 1859-1864.

Average cost in Azamgarh 1859 to 1864 per ton	£20.40 per ton
Cost of freight to Calcutta	£ 3.20 “ “
Freight to Britain	£ 4.0 “ “
Import duty Britain, Muscovado	£13.80 “ “
Brokerage @ 5 percent	£ 4 “ “
Total cost per Ton in Britain	£45.40 Per ton ⁸⁸

During the period 1859-63, the wholesale price of fine Bengal sugar in the UK was £42 to £51 per ton. Consequently, by 1863 fine *khand* had virtually disappeared from the British market. Date tree sugar, frequently called *gurpatta*, still held a small share of the market, but this sugar also became uneconomic after 1864, a year during which its price in the UK fell from £51 to £33 per ton.⁸⁹

The British sugar market changed dramatically after 1846, by 1854 all sugar duties, foreign or British colonial had been equalised. Large quantities of cheap colonial cane sugar were available to a British refining industry increasingly employing vacuum technology and achieving higher yields of finished product. Consequently, *khandisari* sugar was squeezed from the British market.

⁸⁶ J. H. Mackintosh, *Azamgarh* (1881), p. 160, para. 547.

⁸⁷ *Ibid*, p. 161, para. 548.

⁸⁸ The sources of the data in the following table are sugar prices in Britain, William Reed (1866), p. 166. Rates of duty, Command Paper 8706 (1894) p. 219. Freight cost between India and Britain, Asiya Siddiqi “The Business World of Jansetjee Jejeebhoy,” *Indian Economic and Social history Review* Vol XI no. 3 p.319.

⁸⁹ William Reed, (1866) p. 166.

Traditional technology with its high labour inputs and inflexible cost structure, did not lend itself to production efficiencies that would allow it to be competitive with industrialised sugar, consequently *khand* could not retain its niche on the British market. Indian capitalists and European sugar merchants were becoming aware of this trend, and no doubt, saw little point in continuing to export to this market. Demand for *khandisari* sugar within the sub-continent remained firm; there was even a gradual upward movement in prices. This secular trend ensured by 1865, that *khand* had all but disappeared from the shelves of British grocery shops, to be replaced by a clean small-grained sugar, quite similar to the traditional *khand*, but produced with the latest vacuum pans, known to British consumers as "pieces and bastards."

Conclusion

In the early 1840s it looked as if the Indian sub-continent might well develop into a major producer of sugar for the British market. In the event this did not happen. For a brief period, one quarter of the sugar consumed in Britain came from the East Indies. From the early 1850's, however, sugar imports from India began to fall off, until by 1865 they were less than one percent of British consumption. Instead of achieving the status of the British sugar bowl, the sub-continent proved to be only a stopgap supplier to the British market during the period in which Britain's economy made the transition from enclosed imperial trade to free trade.

In arguing this I have touched on a number of major themes. One is the problem of protection of the West Indian sugar colonies through discriminating import duties, and the use of sugar import duty both as a major arm of government revenue and as a way of subsidizing the re-export of West Indian sugar from Britain. Despite this barrier, East India *khand* was able to find a breach in the wall of protection and establish a niche market in British grocery shops. Another significant factor was the almost complete lack of viable sugar plantations in the sub-continent as a result of the self-interested economic policies of the Company government. In addition, European planters and merchants failed to establish mutually beneficial links with indigenous sugar producers or share with indigenous capitalists the burden of financing sugar cultivation through vertical integration. The European and Indians were socially separate: neither trusted the other—sometimes with good reason. In short, they failed to establish an industry based on Western technology and to encourage integration of pre-industrial sugar into the world market. The was equally

applicable to the early attempts to introduce West Indian technology and agricultural methods, circa 1787-1809 as it was to the later phase 1836-1853 within India's factories produced industrialized sugar. At the beginning of this latter period, tariffs ceased to be a restrictive barrier to East India sugar exports; capital to finance infrastructure and industrial related technology was exported to the sub-continent; and an industry capable of supplying much of Britain's sugar requirements came into being. However, the entrepreneurs and modern technology proved to be unequal to the task. In the sub-continent the would-be planters and entrepreneurs met with a number of serious difficulties, amongst which were the natural environment, the *zamindari* system of agriculture, and competition from the long-standing indigenous sugar industry. Many of the European plantations and factories producing industrialized sugar, particularly those in Bengal, ceased to operate 1848-53 after legislation converted the British market from one protected by imperial tariffs to an open and free market. That is to say, they were unable to maintain their position on the British market without the benefit of tariff protection.

I have argued that problems in the sub-continent were central to the failure of the industry. None-the-less, changes in trade and revenue policy in Britain also had a significant bearing on the viability of the sugar industry in the sub-continent. In direct connection with the sugar industry and possibly with regard to the making of policies specific to British India, attitudes and theories held by many influential members of the body politic also had a bearing on the economic management of British India.

West Indian Sugar Protection and Subsidy.

Merchants seeking to bring East India sugar into the British market for home consumption or re-export 1792-1836 found much opposition and little tangible support for their efforts. The support of the East India Company was at best lukewarm, differing considerably from the support given, accompanied by strong rhetoric, from their unwanted allies, the emancipationists. In opposition to the East India sugar trade was a formidable alliance, the West India lobby and influential groups within the British body politic, which together held a community of interests. Further diminishing the prospect of change to the duty regime was the presence among the body politic of those with investments in both Indies. From 1792 to 1813, the East India Company, despite its apparent wealth in the 1790's and what remained of its once considerable political influence, was neither willing nor able to seriously dispute the issue of equal import duties for East India sugar. Initially, economic ties with the slave trade ensured the Company stood aside from the debate on emancipation. When this economic tie ceased in 1807, due to the abolition of the slave trade to the British West Indies, the Company did not press the issue of duties; they after all, were the holders of the India monopoly and the West Indians were sugar monopolists. A serious dispute between these two parties might well have brought the issue of monopoly before the body politic to the detriment of both.

The West India Committee's opposition to East India sugar imports was driven by a combination of factors, such as the fear of the productive capacity of the sub-continent and problems of restricted access of sugar re-exports to the European

markets 1800-1813. The presence of East India sugar in the British market at this juncture, not only offered competition for the West Indians, it was also used as a propaganda tool by the emancipists in their campaign to end slavery. The emancipists promoted it as an alternative to West Indian sugar, which they labeled, as "tainted with the blood of slavery." The government, for its part, was concerned with the economic viability of its Caribbean colonies and the value to the exchequer of West Indian sugar import duties. This ensured East India sugar imports would continue to pay higher duties until emancipation changed the economic equation in favour of the East Indies.

The East India Company, and Land and Economic Policy 1703-1832.

The East India Company, although initially drawn to the idea of developing the East India sugar trade, lost interest after 1800, due to the failure of European attempts to manufacture sugar in Bengal and Madras, the cost of war, and restrictions caused by the India monopoly, thereby seriously affecting the economics of freight. In the sub-continent, this failure of the European sugar planters coincided with changes to the Company's policy with regard to sugar purchasing. No longer interested in promoting the industry, it adopted policies of self-interest with regard to sugar production and its export. These coincided with the implementation of economic and land ownership policies, which also affect the economic development of plantations and therefore, sugar exports from the sub-continent. The Company government's adoption of these policies effectively stifled the growth of a capital-intensive sugar plantation industry. In the absence of a planter economy, and with sugar production largely pre-industrial, a significant planter interest did not emerge.

A Window of Opportunity 1815-1825.

When the first glimmer of free trade shone at the cessation of the India monopoly in 1813, the East India sugar trade appeared to be in for a period of substantial growth, insofar as a real opportunity existed to integrate pre-industrial sugar into the British and world markets. However, European attempts to grow and produce sugar in India were by that time virtually in abeyance. Consequently, the export opportunity, which favoured the fine indigenous sugar *khand*, a grade of sugar that had already established a niche market in Britain and Europe via American and Danish vessels 1790-1807, was to remain unexploited. An opportunity was to some extent enhanced by Huskisson, to who belongs much of the credit for laying the foundation stones of British free trade. He was able to negotiate an agreement that approximated to a quota for East India sugar in the home market to facilitate ballast requirements in the India shipping. British merchants, however, failed to establish a cooperative alliance with indigenous merchants and capitalists. Consequently, when demand grew, supply was invariably deficient and Indian pre-industrial sugars became too expensive for the British market.

During the 1820s, there were in effect, two serious barriers to the expansion of the East India sugar trade: the policies of Company government, which effectively prevented the growth of a European sugar plantation industry, and the penchant of European merchants to batten onto indigenous production in the hope of speculative gain. These problems would cast a similar shadow over the reinvigorated industry of the 1840's.

From Equalisation to Free Trade.

The decision to equalise the duty regime in 1836 came after the West Indian planters had received compensation for their emancipated slaves. With slavery no longer a burning issue, and the ability of the British West Indies to supply sufficient sugar now coming into question, they no longer retained the support of the British body politic. The government of the day sought additional sugar to feed a growing population and contain the price of food, but were bound by the constraints of the imperial trade policy, which dictated that this sugar must come from the plantations within the empire. With these conditions working in favour of East India sugar imports, once again the perception held currency that the sub-continent might, given a few years in which to expand cane cultivation, become a potential 'British sugar bowl'.

The rationale behind such an expectation was, however, hard to understand. In 1836 there were only two or three sugar plantations equipped with iron steam powered mills and modern sugar houses in the entire sub-continent. The pre-industrial nature of the Indian sugar industry had changed very little since 1800. The economic policies of the Company government and the fragile nature of Bengal's financial institutions had prevented any real development. It may have been that the British government was unaware of the economic conditions in Bengal, but such ignorance was unlikely; only a few years had passed since the default of the Agency Houses in 1830-34. The expectation of the British government of substantial sugar exports from the sub-continent contrasted sharply with the consensus among the British body politic, just 13 years earlier in 1823, a year in which, the sub-continent

was judged by parliament to be incapable of exporting substantial amounts of sugar to the UK. There had been no great leap forward in the agriculture of sugar cane and Bengal remained a difficult climate in which to establish plantations. It is true that a few exotic canes were introduced to India with varying degrees of success, but problems such as pest infestation, poor cane husbandry and insecure land title remained. In 1836, the sub-continent could offer the British market a few thousand tons per year of indigenous sugar and some few hundred tons of sugar produced in European ventures; potential beyond this level was an entirely unknown quantity.

The efforts of producers in the period 1836-40, most of whom made pre-industrial sugar, were quite remarkable: but by 1840 it was obvious to the Whig government that the British West Indies, Mauritius and India would not supply Britain with sufficient sugar at an acceptable price level. Consequently, they sought to reduce sugar duties and imperial protection. Defeated in the Commons in 1841 on this issue, the subsequent election ushered in a Peel government, ardently protectionist and confident the British sugar plantations could meet all British requirements.

This belief was more likely founded on poor or incorrect information about the potential of the sub-continent, and driven by their conservative economic rationale. The British government, in common with all other Britons, understood sugar production in terms of a plantation industry similar to that of the Caribbean, which had successfully supplied the British home market for 150 years. Yet, in 1841, based on a handful of plantations and factories producing industrialised sugar widely scattered over the Gangiatic plains, they expected a substantial increase in the sub-

continent's supply capability. Apparently, Britain by 1841, could now rely on the efforts of a few Europeans and the toil of thousands of peasant cultivators, the latter once pejoratively described by Huskisson as *Hindoo weavers*, who did not have the necessary skills to produce significant volumes of sugar. The evaluation of their abilities had apparently undergone a dramatic change by 1841. Now the British government expected these same peasant cultivators on their small plots, using primitive boiling utensils, to not only fill the breach caused by emancipation, but also the growing demand for sugar from the expanding industrial work-force. If indeed they held this view, it was ironic that British industry, having driven Bengalis from their traditional employment as weavers and spinners into subsistence agriculture, would now call upon them to feed workers in industry, which in effect, had taken their traditional livelihood. Many thousands did turn some of their productive capacity from growing subsistence crops to the production of sugar cane. Their contribution was considerable, motivated in large part by the coercive power of indebtedness to zamindars, middlemen and moneylenders.

The British government, for its part, placed much faith in the European component of the sugar industries of Bengal and Madras, yet after a mere four-year development period, this same government began to enact legislation, which betrayed the protectionist rhetoric of 1841, and the trust entrepreneurs investing in the sub-continental sugar industry placed in the Tory party. The desire to continue protectionism drove the first sudden change in policy in 1845, which allowed free grown foreign sugar into the home market. This eventuality did not cause great concern in the sub-continent, but accompanying this legislation were changes to

regulation, which inflicted severe restrictions on the industrialised sugar factories of Bengal and Madras. This took the shape of Peel's decision to alter the duty system with the intention of preventing high quality sugar from Demerara and Bengal receiving the lowest duty classification of muscovado. Legislative changes to sugar import duties in the 1820s, presented sugar refiners in these two regions who had installed vacuum pan technology, to enhance their bottom line at the expense of the exchequer. Peel's speech in parliament with regard to the changes in the duty regime in 1845, have left him open to an accusation of being a Luddite, in that he discriminated in favour of the older technologies used by West Indian planters and some British refiners, instead of encouraging newer technologies. His rationale was in part to recoup revenue lost when these high quality sugars entered Britain at the old muscovado grade. The amount of revenue saved, however, was minimal, while the effect on the factories in the sub-continent was considerable; it was a policy change poorly thought through.

Tory policy of 1841, called for increased production in the British sugar plantations, which in turn helped to encourage large-scale capital investment. A short five years later, Peel condemned those who answered this call and acted to diminish their viability; having invested capital in response to his election promises, they were, at least, entitled to a period of readjustment.

The volte-face of 1846 came as a complete surprise to colonial producers. Although it was Russell's Whigs, with the help of Peelite Tories that passed the act, it was Peel's apparent sudden conversion to free trade that effectively created the possibility of change. The actions of the home government, although justifiable in

terms of Britain's expanding economy, acted as bludgeons to the head of colonial trade. The demise of industrialised sugar processing in Northeast India was, however, not solely the product of these changes. The entrepreneurs directly involved in these enterprises, particularly those in Bengal, must also bear much of the blame. As in the earlier period, they failed to forge mutually beneficial and cooperative links with indigenous merchants and capitalists, an arrangement vital for an industry lacking sugar plantations to supply them with raw material (i.e. *gur*). Instead, they batted on to the indigenous sugar-trading network in the hope of obtaining raw material at very low prices. Consequently, they had no real control over cost inputs or the quality of this material. To remain viable, these high cost installations were in need of a fully developed plantation industry to supply clean, uncontaminated juice for processing with their modern industrial technology.

Such plantations, however, had not come into being. The policies of the Company government, not only undermined the earlier formation of a viable plantation industry, but also failed to offer substantial support for this industry after 1836. Land tax, the revenue basis from which the home charges were derived, remained high, while by-product production in the interiors, vital to the development of the industry, was hampered by red tape. Secure land title in the more productive areas of Bengal was unavailable; where it was granted, it was in regions far from the exit port of Calcutta, such as Gorakhpur and Deyrah Dhoon. In these regions, the yield per hectare was too low to sustain the high investment in technology and infrastructure.

Pre-industrial Sugar in Competition with Industrialised Sugar: *Khand* in the British Market 1846-65

The export of indigenous sugar, *khand*, continued to enjoy some success in the British market until the early 1860's. This sugar, a product of a pre-industrial technology, was not subject to the development and economies of scale as was the technology born in the furnace of the European industrial revolution. It could hold its place in the British home market however, only so long as clean raw sugar continued to hold a price advantage over British refined sugar. From the early 1850s vacuum pan technology was in a state of progressive development, which led to greater product efficiencies and control over production, the ready acceptance of this sugar among the working poor also gave them efficiencies of scale. These improvements at refinery level in Britain were assisted to a large degree by the availability of cheap colonial sugar when British duties on all sugar, imperial or foreign, were equalised in 1854. This was an environment in which pre-industrial sugar, manufactured with traditional techniques, pre-industrial technology and fixed costs, was unable to compete. From 1864, subsidised European beet sugar began to arrive on British home market, imports of refined sugar began to grow, and the price of sugar progressively dropped as sugar duties were reduced and bounty fed sugar began to take a major slice of the British market. In this highly competitive market, the now too expensive pre-industrial fine sugars of India, received the *coup de grace*.

British Perceptions and Economic Policy in India.

The importance of the sugar industry to Bengal or Madras, or the loss of technology, skills, infrastructure and capital invested, were not subjects that received a high priority during the sessions of the Select Committee of 1847-8. The general opinion, even amongst those with some knowledge of Bengal, was that the inhabitants of the sub-continent would consume most of the additional sugar produced through the stimulus of the protected British market place, or they would turn from sugar cane production to other crops. No allowance was made or consideration given, to the *ryots*, even though they suffered from some level of social disruption and indebtedness as they cultivated a crop, which offered them little incentive.

The Select Committee did propose continuation of some tariff protection, but in the event the sub-continent received neither subsidy nor tariff help, other than that gained in the short reprieve when the period of gradual equalisation was extended in 1848 from 1851 to 1854. The legislative changes of 1846 and the financial crisis of 1847-8 dealt a severe blow to Mauritius too. Here the British government assisted planters with carry-on finance and some reduction through drawbacks with rum export duties in 1848, the rationale being the islands almost total reliance on sugar. The West Indies also suffered severely from the effect of emancipation, followed a few years later by the Act of 1846 and the colonial depression of 1847-8. They received a small measure of relief through the import duty structure of 1854 and 1867, framed to offer some assistance to their low-grade muscovadoes. India, however, with few friends in Westminster, received only the sympathy expressed in the findings of the *Select Committee* of 1847-8. In the plethora of papers discussing

distress in the British sugar colonies post 1847-8, mention of the sub-continent is notable by its absence.

During the ten-year period after complete equalisation of duties in 1854, exports of sugar from the sub-continent fell dramatically. The major contribution by British India to the colonial sugar industry during the second half of the nineteenth century would be the labour of thousands of indentured workers sent to Mauritius, British West Indies and Fiji to be cheap labour in sugar plantations and, the odd momentary surge in imports when crops in the Americas or Europe failed.

The Act of 1846 dealt a severe blow to the European sector. Without viable plantations to feed the modern factories, sugar production in the sub-continent could not compete with nations possessed of a plantation industry, some of which were from the late 1840's, beginning to move toward the more efficient central factory production. Although this legislation was a significant factor in the closure of much of the Bengal industry, the policies of an earlier era and the poor fiscal health of British India also contributed significantly.

Policy formulations, which retarded and stifled economic growth in Bengal, were due in part to the nature of government in the Indian Presidencies. The evolution from a predatory mercantile state to a colonial one was never complete. Consequently, the Company's role as collector of revenues, acquired with the *Dewani*, changed only in that it became a collector of revenue to pay the home charges. This drain of agricultural revenue from India significantly influenced the economics of the presidency and the formation of economic policy throughout this period.

There was also something contradictory with regard to British perception of government in India. The concept of trusteeship was, from circa 1820, a strong motivating ideology among administrators in the sub-continent and at Leadenhall street. Yet, it is not without foundation to suggest that those involved in the framing of the trade policy of British India perceived India in an unequal manner, as a potential market for British wares and supplier of raw material, the latter, only at Britain's convenience. Their understanding of India was also coloured by their orientalist perceptions of India. To many, the sub-continent was an exotic other, and as such an entity they less than fully understood.

By leaving the administration of British India, albeit partially, in the hands of the East India Company, long after its role as a mercantile entity ceased, government in the sub-continent effectively was given a once removed status, segregated and yet included. This tended to put the sub-continent at the periphery, not at the centre of British thinking with regard to policy, a perception, which, as far as agricultural commodities were concerned, led to a perception of the sub-continent as a *reserve* supply to Britain when other sources failed.

The British government did not afford the sub-continent the same priority as colonies settled by British citizens: it was instead, seen as a largely mercantile economy. On the other hand, the Caribbean sugar colonies, until the late 1830's, had an intimate relationship with the mother country. Given the longevity of this relationship, this was to some degree unavoidable, akin to that of a mother and her first born.

In 1846, the European sector of the sub-continental sugar industry was vulnerable. It was an industry with considerable modern infrastructure, but its sources of supply were another matter entirely. The entrepreneurs did not seek partnership or cooperation with the indigenous sector. Instead, they were a parasitical entity reliant upon their host for sustenance and, as such, unprepared for sudden or radical change to their market place. In Britain, however, the pressure for change was immense; the world's greatest industrial power was intent on seeking markets for its industrial produce and cheap food for its people. Britain in the mid-eighteen-forties was on the cusp of creating a change that would wreak havoc among those of its colonies with serious structural economic weaknesses. Free trade, cheap raw materials and a cheap British breakfast table were the popular phrases in 1846. Consequently, the government spared little thought for the potential of the modern sugar industry recently built-up in the sub-continent. An investment, given some long-term encouragement by the home government, may well have formed a gateway through which industrial development and attendant skills were introduced to British India much earlier than actually eventuated

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Statistical Appendix

The calendar year in which British sugar statistics were calculated has changed several times during the period 1792-1865, for example, Irish sugar imports and consumption are also included in UK statistics from 1822. In order to show consistent year-by-year figures for imports, re-exports and home consumption, tables in this appendix have been collated to factor in these changes. The Parliamentary Papers cited in this appendix are usually those giving long runs of statistics. Many other papers showing shorter periods were also consulted these are shown in the bibliography pp. 327-329.

Table 1: Value of Exports of Sugar from the British Territories in India 1795-6-1819-20, based on an exchange rate of 8 sicca rupees = £ sterling.

Year	U.S.A.	Gulfs	G/Brit	Europe	Other	Total	Est. Tons
1795-6*	£16,088	£1,781	£38,147	£33,571	£776	£90,360	2,999
1796-7*	41,793	889	59,625	38,667	11,266	152,250	6,070
1797-8*	65,117	774	22,831	6,437	2,273	97,432	4,053
1798-9*	213,575	9,291	47,000	26,924	4,150	169,783	7,731
1799-0*	82,417	5,156	86,333	16,744	2,541	193,191	11,141
1800-1*	68,831	2,689	14,926	5,004	6,705	98,155	4,525
1801-2*	38,926	6,165	27,899	3	4,808	77,801	3,569
1802-3*	63,173	49,414	46,748	1,781	10,207	171,323	8,736
1803-4*	106,664	38,196	11,322	4	24,953	181,139	6,184
1804-5*	82,035	46,306	176	334	8,009	136,860	5,490
1805-6*	146,210	118,513	6,849	6,851	4,480	282,903	10,576
1806-7	121,850	103,085	4,303	8,205	39,950	277,393	11,006
1807-8*	34,765	61,181	37	63	16,983	113,029	4,422
1808-9*	2,046	70,674	21	Nil	17,640	90,382	3,327
09-10*	11,914	104,116	2,422	Nil	12,426	130,877	4,159
10-11*	4,444	45,580	11,418	Nil	16,058	77,500	3,316
11-12*	4,295	68,112	1,367	689##	20,153	94,616	4,277
12-13*	7,046	131,177	1,191	428##	5,689	145,531	6,311
13-14*	Nil	94,883	3,583	60##	6,760	105,226	5,135
14-15*	Nil	89,917	142,425	2,991##	22,416	257,749	11,894
15-16*	31,587	78,571	132,636	1,151##	53,485φ	297,430	11,745
16-17*	130,807	61,086	142,639	19,270⊗	36,446	390,248	13,247
17-18*	159,001	130,006	166,186	40,129	33,058	528,352	18,038
18-19*	156,470	120,970	173,723	113,699	17,078	581,940	18,117
19-20	189,082	98,455	281,005	52,272	33,790	654,604	22,154 ¹

The years 1795-6 to 1801-2 are for Bengal only, from 1802-3 all three presidencies are included.

* Data from tables on pages 66-68, ** data from Pages 37 to 60 *East India Sugar*.

1806-07 the records of imports and exports of Bombay and Surat were lost at sea.

φ Includes sugar exported to Siberia.

¹ *E. I. S. App. IV*, pp. 62-65, estimated quantities are based on value given in these tables and the price per ton paid by the East India Company as indicated in Table 55 below.

Table 2 Value and Estimated tonnage of Sugar Exports and Imports of the British Territories in the Sub-continent 1795-6-1819-20.

Year	Value Imports	Estimated Tonnage	Value Exports		Estimated Tonnage
1795-6*			£90,360	30.13	2,999
1796-7*			152,250	25.08	6,070
1797-8*			97,432	24.04	3,993
1798-9*			169,783	21.96	7,731
1799-0*			193,191	17.52	11,026 ¹
1800-1*	282,637	10,196	98,155	21.69	4,469
1801-2*	131,310	4,737	77,801	19.61	3,967
1802-3*	250,152	9,024	171,323	29.26	5,855
1803-4*	126,724	4,571	181,139	25.92	6,988
1804-5*	16,922	610	136,860	26.75	5,166
1805-6*	257,368	9,284	282,903	25.17	11,239
1806-7	209,849	7,570	277,393	25.66	10,810
1807-8*	157,577	5,684	113,029	17.16	6,586
1808-9*	143,055	5,160	90,382	31.44	2,875
1809-10*	146,703	5,292	130,877	23.36	5,602
1810-11*	101,694	3,668	77,500	22.38	3,643
1811-12*	97,648	3,524	94,616	23.06	4,103
1812-13*	170,356	6,145	145,531	20.49	7,102
1813-14*	199,482	7,194	105,226	21.67	4,856
1814-15*	159,466	5,752	257,749	25.92	9,944
1815-16*	204,046	7,361	297,430	29.46	10,096
1816-17*	322,258	11,625	390,248	29.06	13,429
1817-18*	286,748	10,344	528,352	32.12	16,468
1818-19*	203,937	7,357	581,940	29.52	19,713
1819-20	146,703	5,292	654,604	31.23	20,960 ²

² E. I. S. App. IV, pp. 62-68

Table 3: Value of Imports of Sugar and candy to Calcutta from Various Asian Ports 1795-6-1801-2, and to the Ports of Calcutta, Madras and Bombay 1802-3-1821-22.

Year	China	Java	Mauritius	Manila	P & E*	Other	Value Imports	Estimated Tonnage
1795-6	£3,146	£28			£608	£198	£3,980	
1796-7	5,145				875		6,021	
1797-8	3,472						3,472	
1798-9	3,993						3,993	
1799-00	3,745						3,745	
1800-01	7,680						7,680	
1801-02	3,825	643					4,468	
1802-03	207,336	66,402	Nil	1,277	4,613	3,009	282,637	10,196
1803-04	36,825	92,215	353	Nil	1,864	53	131,310	4,737
1804-05	206,444	1,733	Nil	Nil	5,009	1,649	250,152	9,024
1805-06	119,631	92,216	Nil	13	5,009	338	126,724	4,571
1806-07	12,359	244	Nil	Nil	2,624	1,695	16,922	510
1807-08	241,932	4,854	Nil	Nil	10,198	384	257,368	9,284
1808-09	206,769	Nil	Nil	Nil	3,047	33	209,849	7,570
1809-10	128,423	Nil	Nil	9,086	19,191	878	157,577	5,684
1810-11	122,264	Nil	Nil	9,435	7,509	3,847	143,055	5,160
1811-12	73,616	3	140	22,231	35,454	15,279	146,703	5,292
1812-13	24,509	12,185	3,039	3,212	49,597	9,152	101,694	3,668
1913-14	68,178	6,468	210	7,530	15,094	168	97,648	3,516
1814-15	98,700	2,295	Nil	45,737	23,211	413	170,356	
1815-16	118,007	107	Nil	61,802	19,497	69	199,482	
1816-17	79,312	Nil	Nil	46,156	33,978	Nil	159,466	
1817-18	120,566	Nil	410	59,133	21,063	2,901	204,046	
1818-19	257,555	Nil	Nil	58,939	6,073	15	322,258	
1819-20	250,931	1,924	8,390	Nil	23,366	2,151	286,748	
1820-21	121,345	Nil	27,055	23,328	30,015	Nil	203,937	³

Penang and Eastward: includes sugar traded via the Presidency of Penang from the Malay Peninsula and the Dutch East Indies. 1820-21 represents import to Bombay only.

³Ibid.

Table 4: Sterling Value of Sugar Exports from British Indian Ports to Persian Gulf and Red Sea, the sterling values are converted at 8 Sicca rupees to the pound.

Year	1802-3	1803-4	1804-5	1805-6	1806-7	1807-8	1808-9
Calcutta	10,805	6,855	12,764	67,156	103,083	25,865	13,876
Madras			1		2		247
Bombay	38,609	31,340	33,541	51,365	*35,352	35,315	56,538
Total	49,414	38,195	46,306	118,512	138,437	61,180	70,661
Year	1809-10	1810-11	1811-12	1812-13	1813-14	1614-15	1815-16
Calcutta	38,165	21,709	13,222	45,963	52,585	41,206	52,235
Madras	284	1125	143	2,418			
Bombay	65,666	22,745	54,747	82,795	42,297	48,713	26,335
Total	104,115	45,579	68,112	131,176	94,882	89,919	78,570
Year	1816-17	1817-18	1818-19	1819-20			
Calcutta	34,596	67,475	71,109	55,307			
Madras	793						
Bombay	25,700	62,531	49,861	43,147			
Total	61,089	130,006	120,970	98,454	⁴		

* The records for Bombay in 1806-7 were lost in a Maritime accident, consequently the average of the period 1802-3 to 1808-9 has been applied for this season.

Table 5: Quantity of Muscovado Sugar Domestic and Foreign Exported or Re-exported from the United States 1800-1820.

Year	Domestic	Foreign	Total
1800			25,651
1801			44,348
1802			27,775
1803	1.5	10,555	10,556
1804	372	33,703	34,074
1805	114	55,808	54,559
1806	95.0	66,194	66,288
1807	8.0	66,054	65,062
1808	5.6	13,619	13,619
1809	9.7	20,574	20,583
1810	6.4	21,374	21,381
1811	78.6	8,303	8,381
1812	60.0	6,330	6,390
1813	332	3,008	3,339
1814	0.3	0.4	0.7
1815	2.8	1,449	1,452
1816	8.0	7,963	7,971
1817	16.5	9,163	9,180
1818	24.0	10,026	10,050
1819	14.6	5,121	5,136
1820 ⁵	28.5	14,267	14,296

⁴ *Ibid*, pp. 66-74.

Table 6: Tons of Sugar Imported into the United States of America from British India 1791-1819, 1821 and 1825.

Year	Brown	Other	Year	Brown	Other	Year	Brown	Other
1791	260	N/A	1792	N/A	N/A	1793	N/A	N/A
1794	N/A	N/A	1795	504	N/A	1796	1,346	1.05
1797	1,627	0.18	1798	3,918	11.07	1799	768	N/A
1800	3,404	0.03	1801	2,544	21.80	1802	1,651	0.15
1803	2,727	0.45	1804	3,820	1.77	1805	2,105	53.55
1806	3,865	151.00	1807	2,968	1.50	1808	1,524	0.09
1809	94	0.02	1810	438	0.05	1811	195	0.42
1812	146	N/A	1813	141	Nil	1814	Nil	Nil
1815	Nil	11.00	1816	1,061	2.18	1817	5,631	143.00
1818	4,952	40.00	1819	5,008	2.00	1820		
1821 ⁶	1,972		1825	99		1823		

Table 7 Sugar Exported in American Vessels from India ports 1795-6-1819-20

Year	Value	Est. tons	Year	Value	Est. tons
1795-6	£16,088	534	1807-08	34,765	1,360
1796-7	41,793	1,667	1808-09	2,046	75
1797-8	65,117	2,708	1809-10	11,914	378
1798-9	213,575	9,725	1810-11	4,444	190
1799-00	82,417	4,704	1811-12	4,295	192
1800-01	68,831	3,173	1812-13	7,046	305
1801-02	38,926	1,785	1813-14	Nil	
1802-03	63,173	3,221	1814-15	Nil	
1803-04	106,664	3,641	1815-16	31,587	1,218
1804-05	82,035	3,209	1816-17	130,807	4,440
1805-06	146,210	5,466	1817-18	159,001	5,428
1806-07	121,850	4,841	1818-19	156,470	4,310
			1819-20	189,082	6,602

This estimate of tonnage is again arrived at by dividing the sicca rupee values in the original records by 8 and dividing the sum of this by the average price paid by the Company as shown in table 28.

⁵ *The World's Sugar Production and Consumption: Showing the Position at the End of the Nineteenth Century. Summary of Commerce and Finance for November 1902 United States Bureau of Finance, (Washington 1903), p. 1379.*

⁶ *Ibid.*

⁷ *E. I. S. App. IV pp. 66-72*

Table 8: Exports of Sugar British India to North America 1795-6 to 1819-20

Year	Port	Value	Est. Tons	Year	Port	Value	Est. Tons
1795-6	Calcutta	£16,088	539	1809-10	Calcutta	11,905	
1796-7	"	41,793	1,666		Madras	8	
1797-8	"	65,117	2,708		Total	11,913	375
1798-9	"	21,357	975	1810-11	Calcutta	4,438	
1799-00	"	82,417	4,706		Madras	6	
1800-01	"	68,831	3,173		Total	4,444	190
1801-02	"	38,926	1,802	1811-12	Calcutta	3,578	
1802-3	Calcutta	63,068			Madras	537	
	Madras	105			Total	4,215	188
Total		63,161	3,221	1812-13	Calcutta	3,478	
1803-4	Calcutta	106,664	3,641		Madras	3,568	
1804-5	Calcutta	82,032			Total	7,046	305
	Madras	2		1813-14	Nil		
Total		82,034	3,290	1814-15	Nil		
1805-6	Calcutta	146,182		1815-16	Calcutta	31,578	1,218
	Madras	29		1816-17	Calcutta	130,807	4,440
	Total	146,211	5,465	1817-18	Calcutta	157,020	
1806-7					Bombay	1,981	
	Calcutta	121,820			Total	159,001	5,428
	Madras	30		1818-19	Calcutta	146,126	
	Total	121,850	4,841		Bombay	10,344	
1807-8	Calcutta	34,765	1,361		Total	156,470	4,871
1808-9	Calcutta	1,133		1819-20	Calcutta	182,765	
	Madras	913			Bombay	6,317	
⁸	Total	2,046	75		Total	189,082	6,377

In an attempt to establish an estimation of the actual tonnages exported the sterling value of exports has been divided by the average prime cost in India paid by the East India Company for its sugar exports in the appropriate year as indicated in Table 28.

Table 9 British Sugar Duties per cwt and Ad-valorem 1789-1800.

Year	Brit-Plantation per cwt	East India	E/ India ad-valorem duty.
1789	£0.62		
1790	£0.62		
1791	£0.62	£0.13	£37.83
1792	£0.75	£0.13	£37.83
1793	£0.75	£0.13	£37.83
1794	£0.75	£0.13	£37.83
1795	£0.75	£0.13	£37.83
1796	£0.75	£0.13	£37.83
1797	£0.87.5	£0.26	£37.83
1798	£0.96.6	£0.26	£40.83
1799	£1	£0.16	£42.83
1800 ⁹	£1	£0.16	£42.83

⁸ *Ibid*, pp, 66-72 and Table of sugar exports, Freights and costs. P. 76.

⁹ Command Paper 8706, (1894), *Report of Customs and Tariffs*, p. 215.

Table 10: Range of the Wholesale Prices per Cwt of East India Muscovado Paid by the English Grocery Trade, 1814-1826.

1794	£4.20	1802	£3.85	1810	3.90	1818	£5.00	1826	4.15
	3.65		2.25		3.85		£3.85		3.40
1795	4.30	1803	4.00	1811	4.00	1819	£4.75	1827	4.10
	3.70		2.50		3.80		£3.75		3.50
1796	4.70	1804	4.50	1812	4.50	1820	£4.50	1828	3.95
	4.00		3.75		3.75		£3.40		3.50
1797	4.20	1805	4.60	1813	4.70	1821	£4.20	1829	3.90
	3.40		3.60		3.80		£3.30		3.15
1798	5.00	1806	4.60	1814	£4.85	1822	£4.20	1830	3.65
	3.80		3.65		£3.83		£3.40		270
1799	3.30	1807	5.00	1815	£5.00	1823	£4.30	1831	3.40
	2.25		3.20		£4.00		£3.50		2.75
1800	4.20	1808	4.75	1816	£5.30	1824	3.80	1832	3.45
	2.35		3.20		£4.10		3.30		2.75
1801	3.80	1809	4.30	1817	£5.3	1825	4.25	1833	3.45
¹⁰	2.75		3.50		£4.10		3.50		2.75

Table 11: Range of Wholesale Prices of West Indian Muscovado 1794-1833.

1794	£4.20	1802	4.20	1810	4.40	1818	4.90	1826	4.00
	2.30		2.40		3.95		3.50		2.80
1795	4.50	1803	4.20	1811	4.35	1819	4.65	1827	4.00
	3.00		2.75		2.75		2.9		3.35
1796	4.90	1804	4.90	1812	4.40	1820	4.30	1828	3.85
	3.60		3.60		3.40		2.70		2.65
1797	4.90	1805	4.70	1813	N/a	1821	4.25	1829	3.50
	3.70		3.00				2.55		2.20
1798	5.15	1806	4.70	1814	N/a	1822	4.15	1830	3.20
	4.10		3.85				2.50		2.20
1799	5.50	1807	4.30	1815	5.50	1823	4.05	1831	3.20
	2.70		2.65		4.05		2.60		2.20
1800	4.65	1808	4.70	1816	4.70	1824	375	1832	3.20
	3.00		3.80		3.45		2.75		2.45
1801	4.60	1809	4.40	1817	4.75	1825	4.05	1833	3.25
¹¹	2.75		2.90		3.40		3.05		2.35

Table 12 British West Indian, Mauritius and East India Sugar Retained for Home Consumption and Imports of Foreign Sugar for Re-export 1790-1835

Year	W/I imports	W/I H/ Cons.	E/I Imports	E/I H/ Cons.	For. Imports
1790	94,120	76,811			
1791	90,448	70,160			
1792		68,079	351		
1793	105,765	83,855	2,005	2,405	
1794	104,985	74,469	4,915	4,403	
1795	83,639	66,811	8,659	8,166	
1796	85,461	77,703	8,254	8,166	
1797	78,896	63,686	5,824	5,296	
1798	98,196	73,827	8,471	5,824	
1799	125,593	138,607	6,024	8,160	
1800	145,136	104,748	11,747	6,023	
1801	191,550	156,854	3,061	11,741	9,006
1802	147,182	143,289	2,886	3,060	3,310
1803	148,767	99,493	4,896	2,869	7,321
1804	146,128	127,225	6,275	4,895	7,338
1805	150,592	115,532	6,218	6,275	6,593
1806	190,219	158,154	1,861	6,215	5,607
1807	182,474	138,714	5,929	1,861	1,630

¹⁰ Lowell J. Ragatz, *The Fall of the Planter Class*, Chart 21, p. 358.¹¹ *Ibid*, Chart 20, p. 350.

1808	184,386	169,993	3,629	5,929	11,283
1809	177,960	159,254	1,310	3,619	29,144
1810	193,991	194,054	2,462	1,310	49,573
1811	188,855	186,071	1,020	2,462	13,152
1812	186,977	157,633	3,582	1,015	6,863
1813	174,157	138,786	2,500	3,643	15,497
1814	178,980	119,882	2,492	2,499	29,181
1815	182,140	122,152	6,282	2,252	18,294
1816	178,016	137,587	6,382	1,699	9,639
1817	183,768	182,436	6,295	1,366	5,296
1818	188,186	104,864	8,120	1,253	6,902
1819	195,375	150,536	13,861	5,002	4,292
1820	188,473	154,543	13,611	4,240	8,150
1821	195,348	164,588	13,458	6,010	9,852
1822	171,753	152,276	11,318	6,854	5,648
1823	188,676	168,159	10,979	5,145	10,430
1824	196,752	171,921	13,592	7,634	10,287
1825*	175,064	158,058*	7,300	5,360	8,357
1826	200,121	182,258	7,799	7,165	3,695
1827	177,546	173,491	8,029	3,493	9,558
1828	215,671	189,099	6,638	4,862	8,027
1829	207,641	184,565	8,702	5,920	11,578
1830	195,663	196,261	10,675	6,599	15,176
1831	205,187	198,132	8,089	5,677	29,159
1832	189,212	189,980	4,412	3,980	22,674
1833	182,780	183,402	5,586	4,914	22,130
1834	192,212	190,375	3,830	6,050	13,335
1835	176,197	196,206	5,066	4,923	13,237

Until 1825 East India sugar includes sugar from Mauritius, from this date West Indian and Mauritius sugars for home consumption are combined.

Table 13 Average Price London Gazette Exclusive of Duty, British Plantation, Muscovado Sugar 1793-1864 and The Mercantile Price Current for Ordinary Havana Yellow and Brazilian Brown and Yellow Sugar.

	West Indian	Mauritius	East India	Havana Yellow	Brazil Brown & Yellow
1793	£2.83				
1794	£2.16				
1795	£3.73				
1796	£3.21				
1797	£3.20				
1798	£3.47				
1799	£3.48				
1800	£3.40				
1801	£2.97				
1802	£1.82				
1803	£2.15				
1804	£2.65				
1805	£2.58				
1806	£2.18				
1807	£1.70				
1808	£1.93				
1809	£2.31				
1810	£2.45				
1811	£1.97				
1812	£2.25				
1813	£2.99				
1814	£3.86			£4.48	
1815	£3.09			£3.71	
1816	£2.43			£2.68	
1817	£2.48			£2.57	

1818	£2.50			£2.61	
1819	£2.07			£2.11	
1820	£1.81			£1.92	
1821	£1.56			£1.52	
1822	£1.55			£1.33	
1823	£1.64			£1.65	£1.43
1824	£1.57			£1.35	£1.21
1825	£1.92			£1.87	£1.76
1826	£1.53			£1.64	£1.44
1827	£1.78			£1.85	£1.49
1828	£1.57			£1.73	£1.38
1829	£1.42			£1.53	£1.08
1830	£1.24			£1.21	£1.95
1831	£1.18			£1.19	£1.90
1832	£1.38			£1.24	£1.07
1833	£1.48			£1.24	£1.11
1834	£1.47			£1.24	£1.16
1835	£1.56			£1.30	£1.37
1836	£2.04			£1.56	£1.39
1837	£1.73			£1.66	£1.06
1838	£1.68			£1.39	£1.06
1839	£1.96			£1.36	£1.10
1840	£2.45			£1.33	£1.08
1841	£1.97			£1.26	£1.04
1842	£1.84			£1.10	£0.91
1843	£1.77	£1.69	£1.88	£1.00	£0.86
1844	£1.67	£1.64	£1.75	£1.06	£0.85
1845	£1.65	£1.59	£1.67	£1.09	£1.02
1846	£1.73	£1.67	£1.73	£1.32	£1.00
1847	£1.43	£1.52	£1.35	£1.22	£1.06
1848	£1.18	£1.16	£1.26	£1.29	£
1849	£1.26	£1.25	£1.36	£1.07	£
1850	£1.30	£1.25	£1.36	£1.13	£
1851	£1.27	£1.30	£1.29	£1.06	£
1852	£1.12	£1.15	£1.19	£1.17	£
1853	£1.22	£1.20	£1.34	£1.10	£
1854	£1.23	£1.09	£1.21	£1.19	£
1855	£1.25	£1.21	£1.40	£1.33	£
1856	£1.50	£1.46	£1.56	£1.57	£
1857	£1.84	£1.80	£1.87	£1.90	£
1858	£1.87	£1.81	£1.31	£1.48	£
1859	£1.33	£1.37	£1.31	£1.42	£
1860	£1.37	£1.45	£1.45	£1.46	£
1861	£1.22	£1.05	£1.33	£1.32	£
1862	£1.11	£1.14	£1.21	£1.14	£
1863	£1.08	£1.08	£1.23	£1.10	£
1864	£1.38	£1.44	£1.14	£1.38	£
1865	£1.10	£1.20	£0.98	£1.24	£
1866	£1.01	£1.12	£0.85	£1.07	£

Table 14: Imports of East Indies Sugar Retained and Re-Exported 1792-1848.

Year	Total Imports	Retained Imports	Re-exported
1792	350	175	175
1793	2,005	2,405	714
1794	4,915	4,403	1,018
1795	8,659	8,166	1,655
1796	5,284	8,166	2,170
1797	5,824	5,296	3,551
1798	8,471	5,824	6,086
1799	6,024	8,160	2,972
1800	11,702	6,023	4,701

1801	3,217	11,741	3,394
1802	2,851	3,060	1,178
1803	4,896	2,869	1,747
1804	6,272	4,895	2,521
1805	6,218	6,275	769
1806	1,861	6,215	543
1807	5,929	1,861	1,020
1808	3,629	5,929	2,453
1809	1,010	3,619	844
1810	2,462	1,310	355
1811	1,024	2,462	202
1812	3,582	1,015	348
1813	3,844	3,643	500
1814	2,492	2,405	2,065
1815	6,282	2,252	5,103
1816	6,382	1,699	3,421
1817	6,295	1,366	5,103
1818	8,120	1,253	4,775
1819	10,276	5,002	5,516
1820	13,861	4,240	4,411
1821	13,458	6,010	9,330
1822	11,318	6,854	4,914
1823	10,979	5,145	5,240-
1824	13,592	7,634	7,318
1825	7,300	5,360	1,831
1826	7,799	7,165	2,333
1827	8,029	3,493	3,204
1828	6,638	4,862	2,127
1829	8,702	5,920	2,808
1830	10,675	6,599	1,670
1831	8,089	5,677	
1832	4,412	3,980	
1833	5,586	4,914	
1834	3,830	6,050	
1835	5,066	4,923	
1836	7,611	5,511	
1837	26,898	13,532	
1838	21,442	20,919	
1839	25,916	23,862	
1840	24,141	25,916	
1841	61,987	52,770	
1842	47,023	46,797	
1843	55,109	52,783	
1844	55,063	52,260	
1845	66,772	61,889	
1846	73,546	72,054	
1847	70,587	59,121	
1848	68,021	67,487 ^{*12}	

¹²P. P.1813 Imports of East India Sugar for Home Consumption and Export Vol. VIII, 1812-13. Customs House Report of the Quantity of Sugar Imported into Great Britain 1793 1822 East India Sugar App. Iv p. 4. P. P. 1812-13 (150) (151) VIII.393, 395. Accounts of Goods and Produce of the East Indies and China Imported and Exported from GB 1792-1811.

Table 15: Tons of Raw and Refined Sugar re-exported from Great Britain 1793-1822.

Year	Col. 1	Col. 2	Col. 3	Total Raw.
1793	*			
1794	*			
1795	*			
1796	12,504	4,614	1,170	18,288
1797	9,165	6,994	2,173	18,332
1798	17,952	6,529	3582	28,062
1799	26,620	7,640	5,776	40,036
1800	11,929	5,601	2,972	20,502
1801	20,455	8,261	3,037	49,086
1802	51,610	4,699	1,277	31,753
1803	29,592	6,927	1,426	57,136
1804	25,107	7,903	1,425	34,435
1805	13,321	6,866	2,520	22,707
1806	14,918	6,346	719	21,983
1807	10,656	4,191	542	15,391
1808	29,843	2,133	1,015	32,991
1809	12,216	3,049	2,453	17,718
1810	13,517	21,011	844	35,372
1811	4,524	25,966	355	30,845
1812	13,799	11,958	202	25,959
1813	15,540	17,827	348	33,715
1814	*21,525	20,500	500	42,525
1815	27,688	23,147	2,065	52,900
1816	24,557	15,570	3,421	43,549
1817	18,875	9,565	5,103	33,525
1818	12,910	6,602	4,775	24,335
1819	13,380	5,434	5,516	24,330
1820	10,919	5,135	4,410	20,464
1821	8,970	6,915	9,330	25,215
1822 ¹³	7,460	9,016	7,364	24,140

Column 1 British Plantation sugar. Column 2 Foreign Plantation sugar. Column 3 East India sugar. Column 4 Total raw sugar Exported.

Table 16: Re-export Bounties, Drawbacks, Net Sugar Revenue and Total Yield of Import Revenue GB.1801-1832.

Year	Column 1	Column 2	Column 3	Column 4
1801	£ 604,776	£ 486,544	£2,395,106	£6,784,637
1802	902,111'	968,690	2,302,339	8,757,184
1803	1,191,967	737,624	1,014,047	7,698,958
1807	1,143,051	£138,550	3,029,484	10,799,041
1808	934,220	59,310	4,074,531	12,647,899
1809	996,220	219,009	3,273,995	12,606,782
1810	1,124,251	123,334	3,117,330	14,375,388
1811	392,149	119,991	3,339,218	14,395,600
1812	693,650	260,761	3,939,939	13,025,502
1813	1,162,794	120,785	3,481,350	13,936,537
1814	1,133,958	139,661	3,276,513	11,365,875
1815	1,465,289	87,246	2,957,403	11,817,718
1816	1,492,800	47,342	3,166,851	11,276,352
1817	1,641,736	43,788	3,967,154,	11,896,311
1818	1,683,158	42,713	2,331,472	13,398,852
1819	1,265,788	21,362	3,507,844	13,855,019
1820	1,608,480	11,467	3,477,770	12,974,357
1821	1,381,721	*	3,494,470	11,857,624
1822 ¹⁴	916,872		4,410,070	12,734,560

¹³ E. I. S. App. IV, p. 5.

¹⁴ P.P. 1821, 1807-20 (442) XV11.178 and 1823, 1822 (63). XIII.579: *Accounts of Sugar Imported and Exported from GB. And the Amount of Duties Received.*

1823	844,536		4,645,343	12,958,101
1824	777,634		4,168,517	13,854,536
1825	735,310		4,953,816	13,519,151
1826	839,886		4,218,623	18,749,076
1827	920,718		5,003,982	19,457,024
1828	920,701		4,576,287	20,070,086
1829	998,610		4,452,793	19,284,434
1830	1,286,753		4,767,342	19,161,113
1831	1,123,434		4,219,049	19,349,635
1832 ¹⁵	949,128		3,986,518	18,248,929

¹⁵Ireland excluded. Column 1 Refined Bounties Column 2 Raw sugar Duty Drawbacks Column 3 Net Revenue from sugar duties. Column 4 Total Yield of Sugar Revenue

* From 1821 raw sugar drawbacks of duty have substantially diminished and are included with bounties.

Table 17: Tons Muscovado Sugar Re-exported from Great Britain 1807-1830.

Year	West Indian	Foreign	Mauritius	East India	Total
1807	29,843	2,133		1020	32,994
1808	12,216	3,049		2,453	17,718
1809	13,817	21,013		844	35,674
1810	4,524	25,966		355	30,845
1811	13,799	11,957		202	25,985
1812	15,540	17,827		348	33,715
1813	21,527	20,500		500	42,572
1814	27,688	23,147		2,065	52,900
1815	24,557	15,571		3,421	43,569
1816	18,857	9,564		5,103	33,524
1817	12,913	6,646		4,775	24,334
1818	13,380-	5,134		5,516	24,030
1819	10,919	6,915		4,411	20,021
1820 ¹⁷	8,970	9,316		9,330	17,024
1821	492	6,085		7,216	13,793
1822	533	6,885		4,911	12,329
1823	561	8,836		5,240	14,637
1824	442	10,699		7,318	18,459
1825	576	8,654	1,079	1,831	12,140
1826	5,115	5,290	2,277	2,333	15,015
1827	2,046	5,198	2,324	3,204	15,772
1828 ¹⁸	2,529	8,016	5,899	2,127	18,571
1829	809	8,647	2,616	2,808	14,880
1830	668		2,419	1,670	

Table 18: Sugar Consumption in Great Britain 1823-1865 with Prices per ton and, per Pound inclusive of Duty, and Annual Fluctuations in Tons Consumed.

Year	Column 1	Column 2	Column 3	Column 4
1823	£59.9	£0.0267	173,300	
1824	£58.5	£0.0261	179,500	+ 6,200
1825	£65.5	£0.0292	163,500	- 6,000
1826	£57.6	£0.0257	189,400	+25,900
1827	£62.7	£0.0279	176,900	- 12,500
1828	£58.6	£0.0261	193,900	+17,000
1829	£55.5	£0.0247	190,400	- 3,500
1830	£50.4	£0.0225	202,800	+12,400
1831	£47.6	£0.0212	203,800	+ 1,000

¹⁵ P.P. 1829 XVI, *Quantities of Sugar Imported to UK for Home Consumption and Re-export with Duties Bounties and Drawbacks 1819-1828*.

¹⁶ P.P. (Command) 8706, (1894) *Report of Customs and Tariffs*.

¹⁷ P. P, 1829 (319) XVII.369, *British Plantation and Foreign Sugar Imported and Exported from GB 1819-1828*.

¹⁸ *Ibid.*

1832	£51.6	£0.0230	198,900	- 4,900
1833	£53.2	£0.0237	188,300	- 600
1834	£54.0*	£0.0241	196,400	+ 8,100
1835	£57.4*	£0.0256	201,100	+ 4,700
1836	£64.8	£0.0289	179,600	- 21,500
1837	£58.6	£0.0261	202,400	+22,800
1838	£57.6	£0.02.57	201,000	- 1,400
1839	£63.1	£0.0281	191,500	- 9,500
1840	£73.5	£0.0328	179,700	- 11,800
1841	£64.8	£0.0289	202,800	+23,100
1842	£62.1	£0.0277	198,400	- 6,400
1843	£58.9	£0.0262	201,400	+ 3,000
1844	£58.9	£0.0262	206,400	+ 5,000
1845	£47.1	£0.0210	244,000	+37,600
1846	£48.5	£0.0216	261,300	+17,300
1847	£42.4	£0.0189	290,700	+29,400
1855	£40.02	£0.0178	1,394,950	
1865	£44	£0.0196	1,407,700	

Column 1 value per ton inclusive of duty. Column 2 Price per pound. Column 3 Total consumption. Column 4 Increase/decrease in Consumption. * 1834 and 1835 were exceptional years for fruit harvest and sugar used to preserve this fruit accounts for these two years being against an established trend of higher prices leading to lower consumption.¹⁹ NB. The values per pound are inclusive of duty at the point of entry into home consumption, they do not include wholesale or retail mark-ups.

Table 19: Total British Sugar Consumption, Consumption Per Capita, Availability of West Indian, Mauritius and East India sugar-Five Year Periods 1815-19 to 1835-39.

Period	Consumption	Imports	Excess/deficit	Population	Pounds Per Capita.
1801-14	1,993,263			17,265,000	18.45
1815-19	869,129	878,338	+ 9,209	19,756,400	16.2
1820-24	843,124	927,831	+ 84,707	21,534,600	17.8
1825-29	914,439	950,938	+ 36,499	22,907,400	17.8
1830-34	985,403	967,404	- 17,999	24,328,200	18.6
1835-39	957,815	840,400	-117,415	25,653,200	17.0
1840-44	983,928	954,198	- 29,730	27,023,000	16.28
1845-49	1,403,514	1,251,072	-152,442	27,929,000	22.5
1850-54	1,788,615	1,360,545	-428,070	27,595,000	29.06

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¹⁹ *Select committee Sugar and Coffee*, Eight Report pp. XXII-XXIII.

²⁰ J. A. Banks, *Social Structure of Nineteenth Century England as seen Through the Census*, pp. 179-268 in R. Lawton (ed.), *The Census and Social Structure* (London, 1978) p.188. I have extrapolated the actual class sizes using Bank's modelling for the Counties of Devon and Lancashire. These indicate the average number of middle and upper class males over 20 in various occupations represented an average of 20.1 percent of the population.

Table 20: Population of GB, Per Capita Consumption of Sugar of Working and Higher Classes 1801-1814 and Five Year Periods 1815-19- 1845-9 and Annually, 1823-32.

Year	Column 1	Column 2.	Column 3	Column 4	Column 5
1801-14	17,256,000	142,376	13,804,800	9.14	55.9
1815-19	19,765,000	142,732	15,812,000	7.98	48.9
1820-14	22,907,000	169,285	18,325,600	8.1	50.0
1825-29	24,328,000	182,887	19,426,400	8.32	50.56
1830-34	25,653,000	197,082	20,522,400	8.49	52.05
1835-39	27,023,000	195,163	21,618,400	7.98	48.9
1840-44	27,929,000	196,785	22,343,200	7.79	47.7
1845-49	27,595,000	280,703	22,076,000	10	68.9
1823	21,672,000	173,310	17,337,600	8.8	54.1
1824	21,991,000	179,558	17,592,800	9.0	55.3
1825	22,804,000	163,569	18,243,200	6.3	48.6
1826	22,605,000	189,425	18,084,000	9.2	56.7
1827	22,893,000	176,993	18,314,400	8.5	52.2
1828	23,200,000	193,963	18,560,000	9.2	56.3
1829	23,535,000	190,485	18,828,000	8.9	54.8
1830	23,834,000	202,861	19,067,200	9.4	57.6
1831	24,083,000	203,812	19,266,400	9.3	57.3
1832	24,343,000	193,990	19,474,400	8.0	53.9 ²¹

Col. 1 Total Population. Col. 2 Total Consumption. Col 3 Estimated Working Class Population 80% Col. 4 Per capita Consumption of Working Class 2 @ 39.5 % of Total Consumption. Col. 5 Estimated Per capita Consumption of Better Sorts @ 61.5% of Total Consumption. Dudley Baxter estimated of the 10,000 000 people in England and Wales in receipt of independent incomes in 1873 2,053,300 of 9,838,300 were lower middle class or better, this equates to 20.8 percent.²²

Table 21: Imports to UK of East India Unrefined Sugar Retained for Home Consumption Showing Each Grade and Total East India Imports 1845-63.

	EWC	NEWC	EBC	NEBC	Total Imports	Retained Imports
1836		7,611			7,611	5,511
1837		14,834			14,834	13,503
1838		21,442			21,442	20,918
1839		25,946			25,946	23,863
1840		24,142			24,142	25,916
1841		61,987			61,987	53,271
1842		47,022			47,022	46,797
1843		55,109			55,109	52,783
1844 ²³		55,063			55,063	52,260
1845	1,106	57,450			66,940	58,566
1846	1,830	70,225			71,613	72,055
1847	842	58,279			70,857	59,121
1848	1,981	65,506			66,637	67,487
1849	4,255	63,457			73,724	67,712
1850	2,300	67,555			67,514	69,855
1851	1,756	61,126			74,542	62,822
1852	1,416	75,184			65,082	76,906
1853 ²⁴	5,734	60,834			61,197	66,568
1954	*1,589	13,072	24,673		39,334	49,522
1855	6,687	29,289	8,089		44,065	42,987

²¹ P. P. Vol., XXXIII 1857, pp. 17-21. A survey of major towns and cities in the United Kingdom conducted in 1856 indicated the working class population consumed 39.5 % percent of sugar and the middle and upper classes 60.5 %.

²² John Burdett, *Useful Toil*, (London, 1974), pp. 260-1.

²³ P. P. 1853 (461) XCXC.567 *Account of the Quantities of Sugar, Rum and Molasses Imported into the UK from West Indies, British Guiana, Mauritius and British Possessions in India 1831-52.*

²⁴ P. P. 1854 (237) LXV.673 *Account of Imports into UK of Sugar, Molasses, Rum, Coffee and Cocoa from W. Indies, British Guiana, Mauritius and India 1831-53.*

1856	2,758	33,348	25,414		60,019	42,988
1857	1,257	29,289	28,830		59,376	46,715
1858	1,728	22,591	28,530		52,849	37,090
1859	2,763	25,665	15,346		43,774	39,758
1860	375	22,148	18,807		41,330	27,898
1861	1,135	19,396	16,555		37,086	42,988
1862	1,040	10,903	17,753		29,696	22,279
1863	23	3,552	8,943		12,518	16,132
1864	1,402	17,812	11,582	13,782	44,578	15,073
1865	646	7,044	8,285	10,855	26,347	26,830
1866 ²⁵	24	1,818	3,514	11,327	19,827	16,683

Table 22: UK Imports of East India Sugar 1867-73 Showing Each Class and Quantity Retained for Home consumption.

	Class 1	Class 2	Class 3	Class 4	Imports	Retained Imports
1867	10	869	1,168	1,783	3,830	15,676
1868	9	1,022	4,026	8,397	13,454	9,068
1869	47	1,311	5,751	21,300	28,409	18,843
1870	166	8,554	3,489	10,920	15,431	16,091
1871	509	1,652	4,128	10,739	17,018	
1872	573	2,138	4,618	31,121	38,450	
1873	155	834	3,010	21,111	25,120	

Table 23: Foreign Sugar Imported to UK and Quantity Admitted for British Home Consumption 1841-1868

Year	Imports	Home Consumption	Year	Imports	Home Consumption
1841	40,157	116	1855	129,966	116,071
1842	30,866	13	1856	93,792	80,937
1843	45,895	5	1857	145,686	130,808
1844	39,271	5	1858	168,252	155,856
1845	45,596	3,864	1859	187,723	175,643
1846	59,868	30,137	1860	188,023	174,797
1847	120,449	48,701	1861	189,539	177,400
1848	92,779	61,048	1862	236,288	222,942
1849	86,257	24,824	1863	226,156	213,705
1850	67,526	45,419	1864	324,171	277,886
1851	114,815	68,952	1865		
1852	53,428	34,126	1866		
1853	98,870	76,590	1867		
1854	160,987	121,964	1868	325,673	302,794

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²⁵ P. P. 1866 (193) LXVI.683, *Return of the Quantities of Sugar Imported for Home Consumption with Rate of duty.*

²⁶ P.P. 1860 (349) LXIII.561 1831-59, 1870 (203) Lxi.559 1845-69, 1871 (187) LXII, 557 1845-70, 1873 (243) LXI.515 1845-72, 1874 (200) LXIII.635 1845-73, *Imports to UK Sugar, Molasses Rum and Cocoa.*

Table 24: Net Sugar Revenue, Price in Bond, Price Inclusive of Duty and Percentage of Duty.

Period	Column 1	Column 2	Column 3	Column 4
1801-14	£3,362,702	£1.31	£2.40	54%
1815-19	£3,649,787	£1.45	£2.51	61%
1820-24	£3,380,670	£1.37	£1.65	83%
1825-29	£4,244,899	£1.39	£1.64	84%
1830-34	£4,557,219	£1.22	£1.35	90%
1835-39	£4,571,131	£1.20	£1.81	66%
1840-44	£4,943,574	£1.26	£1.92	65%
1845-49	£4,069,199	£0.75	£1.42	57%
1850-54	£4,116,566	£0.58	£1.20	48% ²⁷

Column 1 Net Revenue after the deduction of drawbacks and bounties. Column 2 Average duty paid for British plantation sugar in each period. Column 3 Average price in bond. Column 4 Duty as a percentage of bond price

Table 25: Average Value in Bond and Duty Paid per cwt and per Ton 1801-1856.

Year	Duty per cwt.	Bond price per cwt.	Per Cwt.	Per Ton Inclusive of duty
1801-14	£1.31	£1.40	£2.71	£54.20
1815	£1.53	£3.09	£4.62	92.40
1816	£1.46	£2.43	£3.85	77.00
1817	£1.35	£2.49	£3.84	76.80
1818	£1.50	£2.50	£4.00	80.00
1819	£1.43	£2.06	£3.49	69.80
1820	£1.36	£2.81	£3.22	64.40
1821	£1.36	£2.66	£3.02	60.40
1822	£1.37	£1.55	£2.92	58.40
1823	£1.37	£1.65	£3.02	60.40
1824	£1.37	£1.57	£2.94	58.80
1825	£1.37	£1.92	£3.29	65.80
1826	£1.37	£1.53	£2.90	58.00
1827	£1.36	£1.79	£3.15	63.00
1828	£1.36	£1.58	£2.94	58.8
1829	£1.36	£1.43	£2.78	55.60
1830	£1.29	£1.25	£2.54	50.80
1831	£1.21	£1.18	£2.39	47.80
1832	£1.21	£1.40	£2.61	52.2
1833	£1.21	£1.48	£2.69	53.8
1834	£1.21	£1.47	£2.68	53.6
1835	£1.21	£1.67	£2.88	57.6
1836	£1.20	£2.04	£3.24	64.8
1837	£1.20	£1.73	£2.93	58.6
1838	£1.20	£1.68	£2.88	57.6
1839	£1.20	£1.96	£3.16	63.2
1840	£1.26	£1.45	£2.71	54.2
1841	£1.26	£1.98	£3.26	65.6
1842	£1.26	£1.55	£2.75	55.0
1843	£1.26	£1.69	£2.95	59.0
1844	£1.26	£1.69	£2.95	59.0
1845	£0.74	£1.63	£2.37	47.4
1846	£0.75	£1.66	£2.41	48.2
1847	£0.76	£1.38	£2.14	42.8
1848	£0.74	£1.17	£1.91	38.2
1849	£0.65	£1.26	£1.91	38.2
1850	£0.63	£1.26	£1.89	37.8
1851	£0.60	£1.26	£1.86	37.2
1852	£0.54	£1.14	£1.68	33.6
1853	£0.55	£1.25	£1.80	36.0
1854	£0.57	£1.08	£1.65	33.0
1855	£0.67	£1.38	£2.05	41.0
1856 ²⁸	£0.72	£1.50	£2.22	44.4

²⁷ P.P. (1857) Session 2 (47) XXXVIII.471, Consumption of Tea and Sugar in United Kingdom 1801-1856

Table 26: British Sugar Import Duties per ton 1848-1874.

British Plantation Per ton.			Other British Territories			Foreign Sugar		
YEAR	EWC	NEWC	EWC	EBC	NEBC	EWC	EBC	NEBC
1848	£15.20	£13.0	£18.20	£17.0	£15.80	£21.60	£20.0	£18.40
1849	14.00	12.0	17.0	15.600	14.45	19.80	18.45	16.0
1850	12.80	11.0	15.40	14.30	13.20	18.0	17.0	15.40
1851	11.60	10.0	14.0	13.00	12.0	16.20	14.40	14.0
1852	11.60	10.0	13.40	12.40	11.40	15.20	13.60	13.0
1853	11.60	10.0	13.0	11.80	11.0	14.0	13.0	12.0
1854	13.40	11.40	14.80	13.60	12.60	16.10	15.0	13.60
	EWC	NEWC	NEBC					
5/7/1854	£14.00	£12.00	£11					
12/4/1855	17.00	15.00	13.00					
5/4/1857	16.00	13.83	12.66					
			EBM		NEBM			
16/4/1864	11.66	10.41	9.33		8.16			
	First Class	Second Class	Third Class		Fourth Class			
1/5/1867	£11.25	£10.50	£9.58		£8.0			
2/5/1870	5.66	5.25	4.75		4.0			
8/5/1873	2.83	2.66	2.41		2.0			
1/5/1874	Duty Free	Duty Free	Duty free		Duty Free			

EWQC = Equal to White Clayed. NEWC= Not Equal to White Clayed. EBC= Not Equal to White Clayed but Equal to Brown Clayed. EBC=Equal to Brown Clayed.
EBM Equal to Brown Muscovado. NEBM. Not Equal to Brown Muscovado.²⁹

Table 27: Sugar Imports in Tons, Home Consumption and Re-exports from United Kingdom 1841-1850.

Year	Total Imports	Retained Home Consumption	Re-exported
1841	245,401	202,881	42,519
1842	237,800	193,423	44,377
1843	251,028	201,415	49,612
1844	244,003	206,472	37,531
1845	291,044	242,830	48,214
1846	283,125	261,012	22,114
1847	410,476	288,975	121,500
1848	343,496	307,115	36,381
1849	346,867	295,284	51,583
1850	314,577	304,575	10,002 ³⁰

Table 28: East India Raw and Refined Sugar, and Foreign Beet sugar Admitted for Home Consumption 1853 to 1883, with duty per cwt refined sugar and the per capita British consumption of Foreign Refined Sugar.

Year	E/Ind. raw.	E/Ind. Refined	Beet Refined.	Duty Refined Cwt.	Consumption per Capita Refined.
1852		128.1		£0.81.66	1.25 Pounds
1853	61,000	773.2		0.93	1.16
1854	40,000	292	15,206		1.04
1855	36,000	557	14,432		1.19
1856	64,810	252	12,796		1.02
1857	79,605	17.8	14,947		0.95
1858	48,828	3.8	12,867		1.03
1859	57,595	34.6	12,177		0.94
1860	43,645	32.7	13,304		1.03
1861	42,928	178	12,236		0.95
1862	35,966	145	13,482	£0.91/6	1.03

²⁸ Ibid, pp. 4-5.

²⁹ P. P. (Command) 8706, (1894) *Report of Customs and Tariffs*.

³⁰ P. P. 1852-54 Vol., LVII, *Account of Foreign and Colonial Merchandise Imported, Retained for Home Consumption and Exported 1841-1850*.

³¹ P. P. Vol., XXXVIII.490, (1857) pp. 4-5.

1863	13,894	8.75	12,545	£ 66.25	0.95
1864	-----	925	40,123		3.03
1865	24,213	540	36,423		2.73
1866	21,738	8.5	38,571		2.87
1867	11,179	9.8	38,576		2.85
1868	5,829	5	37,613		2.76
1869	24,495		51,299		3.73
1870	19,634		80,094	£0.35	5.83
1871	17,524		74,847		5.29
1872	21,279		88,286		6.19
1873	34,087		109,872	£0.17.9	7.63
1874	17,126		128,901	D/repealed	8.89
1875	28,383		129,732		8.88
1876	34,800		129,913		8.79
1877	58,050		162,761		10.90
1878	46,074		154,922		10.27
1879	18,705		143,508		9.41
1880	18,924		145,541		9.46
1881	32,710		131,660		8.44
1882	72,479		131,947		8.38
1883			156,902		9.87 ³²

Table 29: Tons of Cane Sugar and Saccharine Products Imported to UK from East India and Mauritius 1853–1882.

Year	E/India	Year	Mauritius	Year	E/India	Year	Mauritius
1853*	73,883	1853#	88,373	1869#	22.502	1869	103,066
1854*	54,741	1854#	81,768	1870#	19,282	1870	98,724
1855*	47,928	1855	122,612	1871#	17,265	1871	118,843
1856*	64,256	1856	113,595	1872#	20,964	1872	122,288
1857*	78,428	1857	111,851	1873#	30,883	1873	111,718
1858*	48,689	1858	114,320	1874#	16,873	1874	93,388
1859*	56,744	1859	119,312	1875#	27,963	1875	87,449
1860*	43,698	1860	126,196	1876#	25,370	1876	115,801
1861*	42,293	1861	106,376	1877#	57,223	1877	136,292
1862#	35,434	1862	129,292	1878#	45,410	1878	128,287
1863#	13,688	1863	132,372	1879#	18,423	1879	103,542
1864#	32,111	1864	112,551	1880#	18,622	1880-	108,439
1865#	23,855	1865	130,191	1881#	32,226	1881	108,762
1866#	21,417	1866	119,274	1882#	49,417	1882	115,242
1867#	11,050	1867	96,860	1883#	71,418	1883	113,976
1868#	4,743	1868	95,753	³³			

*Exports sugar of all kinds. #Exclusive of Molasses or Low Khaur

³² Command Paper 8706 *Report of the Sugar Trade* 7 August 1884 p. 26 Table 1 p. 40 Table xiii Compiled by Messers Rueb & Co.

³³ *Ibid.*, Table xxi pp. 58-59.

Table 30: Tons of East India Sugar Imported to GB and Value at Sale Per ton, East India Company and Private Trade, 1791-1821

Year	Column 1	Column 20	Column 3	Column 4	Column 5
1791	248.5	£18.36	£90.14	1.5	£82.66
1792	165.5	£31.34	£105.71	26.4	96.76
1793	1,819	£26.54	£60.14	342.2	54.47
1794	2,879	£33.73	£53.50	282.1	57.29
1795	7,795	£30.13	£56.09	296.1	57.75
1796	4,230	£25.08	£59.04	1,127.4	65.31
1797	3,544	£24.04	£ 57.40	1,716	55.85
1798	6,955	£21.96	£ 65.78	3,226.5	66.6
1799	2,334	£17.52	£ 37.11	2,804	46.15
1800	5,553	£21.69	£44.40	5,488.3	54.54
1801	2,790	£21.80	£52.75	955.5	52.26
1802	2,789	£19.61	£36.62	1,385.2	40.54
1803	1,375	£29.29	£41.36	1,088.4	41.84
1804	3,931	£24.93	£52.92	1,273.8	51.38
1805	5,137	£26.75	£57.36	1.45	36.55
1806	3,290	£25.17	£43.94	7.8	37.30
1807	5,275	£25.56	£38.38	399	22.98
1808	2,422	£27.16	£36.28	296.8	29.77
1809	1,581	£31.47	£43.48	5.95	40.5
1810	2,026	£23.37	£46.88	402.9	44.97
1811	91	£22.38	£38.60	602.9	41.52
1812	3,380	£23.06	£46.07	482.3	45.01
1813	2,378	£20.49	£62.49	1,131.6	59.99
1814	2,127	£21.67	£79.69	669.7	70.37
1815	166	£25.92	£51.26	6,051.6	61.78
1816	947	£29.46	£43.30	4,538.5	45.41
1817	138	£29.29	£47.66	3,652.5	47.68
1818	954	£32.12	£46.18	4,912.4	44.56
1819	1,037	£29.55	£38.83	5,732.4	34.38
1820	919	£31.13	£36.30	7,717.6	29.52
1821	1,986	£28.64	£28.88 ³⁴	7,082.6	26.31 ³⁵

Column 1 Tonnage of East India Company sugar. Column 2 Prime Cost. Column 3 Value at sale London. Column 4 Tonnage Private Traders Sugar. Column 5 Value at sale GB.

Table 31 Value of *Chini*, Crystalline Brown and Date Tree sugar, Calcutta 1812-1821

Year	Month	<i>Chini</i>		Brown		Date		Sugar	
		Low	High	Low	High	Low	High	Low	High
1812	Jan.	£21.8	£23.4	£20.6	£21.4	£18.2	£19.0		
	May	27.6	28.4	26.0	27.0	24.4	25.2		
	Sept.	25.4	26.0	23.8	24.4	21.4	22.2		
1813	Jan	26.0	27.0	23.0	23.8	20.6	21.4		
	May	29.2	30.0	26.0	27.0	23.8	24.4		
	Sept.	27.0	27.6	23.0	23.8	21.4	22.0		
1814	Jan	27.6	28.4	26.0	27.0	23.0	24.4		
	May	30.8	31.8	29.2	30.0	26.0	27.0		
	Sept	28.4	29.2	27.0	27.6	Nil	Nil		
1815	Jan	26.0	27.0	Nil	Nil	23.0	23.8		
	May	30.0	30.4	20.4	23.0	23.6	24.4		
	Sept	31.6	32.4	29.2	30.0	27.8	28.4		
1816	Jan	33.2	34.8	31.8	33.0	Nil	Nil		
	May	32.2	33.3	29.2	30.0	26.0	27.0		
	Sept	32.4	33.2	30.8	31.8	27.0	27.8		
1817	Jan	31.8	32.4	30.0	30.8	Nil	Nil		
	May	35.4	36.4	32.4	33.2	29.2	30.0		

³⁴ *Et I. S.*, App. iv, p.76

³⁵ ...

	Sept	32.4	33.2	29.2	30.0	Nil	Nil
1818	Jan	30.8	31.8	28.4	29.2	Nil	Nil
	May	37.2	38.0	33.20	34.0	30.8	31.8
	Sept	30.0	31.0	27.8	28.4	25.4	26.0
1819	Jan	34.0	34.8	30.8	31.8	Nil	Nil
	May	34.0	34.8	29.2	30.0	27.8	29.0
	Sept	34.0	34.8	32.4	33.0	Nil	Nil
1820	Jan	35.4	36.4	31.0	34.0	30.8	31.8
	May	34.0	34.8	30.8	31.8	26.0	27.0
	Sept	34.0	34.8	30.8	31.8	24.4	25.4
1821	Jan	34.0	34.8	29.2	30.0	21.4	22.2
	May	31.8	32.4	28.4	29.2	21.4	22.2
³⁶	Sept	32.4	33.0	29.2	30.0	20.6	21.4

Table 32: Sugar Yields From Time to Time in the Sub-continent in Tons per Hectare of Raw Gur and Muscovado Sugar

Year	District	Gur	Chini	Muscovado Sugar
1792	Banares		0.30 to 0.52	
1792	Rungpore		0.80 to 1.15	
1792	Soonamooky-Beerbhoom		1.82	
1792	Radnagore		1.55 to 1.9	
1792	Santipore		0.66 to 0.75	
1792	Burdwan		1.72	
1792 ³⁷	Sulkee near Calcutta		1.35	
1794	Beerbhoom			2.48
1794	Kishinagar			2.0
1794	Purnea			1.21
1794 ³⁸	Garagaut			1.70
1837	Azamgurh ³⁹	2.46		1.23
1877	*Rangpur ⁴⁰	1.29		0.64
1882	Central Provinces ⁴¹	2.80		1.40
1915	Untied Provinces ⁴²			0.67

Table 33: Imports in Tons of East India Sugar Showing the Surpluce and Deficit Between Total Imports and Home consumption, 1845-1850.

Year	Home consumption	Imports	Surpluce/deficit
1845	55,804	54,779	+ 1,025
1846	72,425	71,379	+ 1,046
1847	59,121	73,295	+14,174
1848	67,487	73,779	+ 6,292
1849	67,711	76,672	+ 8,961
1850	69,854	63,227	- 6,627 ⁴³

³⁶ Ibid, pp. 35-36.

³⁷ Ibid, Appendix 1 pp. 102-5.

³⁸ *Bengal Sugar: An Account of the Method and Expense of Cultivating Sugar Cane in Bengal*, (London, 1794) p. 20.

³⁹ *Report of, the Collector of Azimgurh on the Settlement of the Ceded Portion of the District Commonly Called Chuklah Azimgurh*, (Agra, 1837). p. 4, paragraph 7.

⁴⁰ W. W. Hunter, *A Statistical Account of Bengal*, Vol. VII, (London, 1876), p. 247. * Estimate.

⁴¹ J. B. Fuller, (1883) Paragraph 5.

⁴² William Hulm and R. P. Singhi. *A Note on the Improvement of Gur and sugar Making in the United Provinces*, (Allahabad, 1916), p. 3.

⁴³ *Report of the Collector of Azimgurh on the Settlement of the Ceded Portion of the District Commonly Called Chuklah Azimgurh*, (Agra, 1837) p. 4, paragraph 7.

Table 34 Bulk Goods in Tons and Rum in Gallons Exported from British India 1834-1846.

Year	Rice	Sago	S/petre	Rum	Sugar	Cotton	Wool
1834	13,848	1,284	12,884	537	5,100	14,697	30.2
1835	14,679	955	9,706	14,068	6,899	18,495	132
1836	18,408	1,240	8,897	38,139	8,588	33,906	485
1837	20,722	764	11,130	67,064	15,147	23,005	839
1838	10,213	908	11,704	53,309	23,705	17,954	847
1839	17,422	1,033	13,621	170,385	29,357	21,059	939
1840	17,498	2,594	9,480	312,031	24,936	34,380	1,090
1841	19,848	3,792	10,077	1,008,933	63,579	43,477	1,343
1842	21,996	2,282	11,066	670,450	47,304	41,505	1,895.5
1843	18,189	1,161	17,291	835,390	55,843	29,335	855
1844	19,363	1,859	10,304	339,813	55,433	39,571	1,235
1845	25,557	2,100	15,385	701,128	66,922	26,088	1,775
1846	34,551	1,910	10,589	892,985	71,613	15,420	2.040 ⁴⁴

Table 35 Ships and Tonnages Inwards/Outwards India and Britain.

Year	Inwards		Tonnage	Outward		Tonnage
	No.	Ave Tons	Inwards	No.	Ave Tons	Outward
1834	186	405	75,461	197	461	90,833
1835	216	414	89,449	219	439	96,157
1836	228	427	97,371	267	441	117,784
1837	282	422	119,069	231	463	106,927
1838	186	405	75,461	197	461	90,833
1839	216	414	89,449	219	439	96,157
1840	288	479	137,883	380	471	179,204
1841	444	466	207,075	461	467	215,421
1842	430	445	191,378	397	509	202,101
1843	441	475	209,600	374	451	168,672
1844	440 ⁴⁵	450	197,979	470	469	220,350
1845-6	⁴⁶ Calcutta only		Calcutta only	267	522	138,575
1846-7	⁴⁷			244	490	119,670
1847-48				262	513	134,360

Nathan Alexander in his evidence before the *Select Committee Sugar and Coffee* First report p.169, explained that 267 vessels sailed from Calcutta in 1845-6, with a combined tonnage of 136,575, an average tonnage of 511. Of these from 180-200 ships were available to ship the 67,000 tons of sugar. Taking the lower figure of 180, each would carry 372 tons of ballast cargo, 200 ships would carry an average each of 335 tons. On a basis of sixty percent of the tonnage being ballast, ships leaving Calcutta in 1845-6 could carry 83,145 tons, 1846-7, 71,802 and for 1847-8 80,616 tons.

⁴⁴ G. R. Porter, *Progress (1848) p. 750, and P. P. (1847) Vol., LX, Imports and Exports of the United Kingdom the West Indies, East India Company's Territories, Ceylon, China etc.*

⁴⁵ G. R. Porter, (1847), p. 753

⁴⁶ *Select Committee Sugar and Coffee 1847-8, First Report p. 169. Evidence of Nathan Alexander, East India merchant.*

⁴⁷ E. Wilkinson, *The Commercial Annual or Tabular Statement of the Commerce of Bengal during the Years 1845-7, 1847-8, (Calcutta, 1848) p. 20.*

Table 36: Imports to UK of Refined Sugar Rum and Molasses from the East Indies 1831-1849.

Year	Refined Tons	Molasses Tons	Rum Galls.	Year	Refined Cwt.	Molasses Cwt.	Rum Gallons
1831	.03		2,828	1832			1,015
1833	39.35	.5	26	1834	93.3		537
1835	18.0	5.1	14,068	1836	43.75	1.45	38,139
1837	14.1	4.3	67,064	1838	11	23.2	53,306
1839	66.15	21.8	170,386	1840	45.5	15.5	311,886
1841	2.3	233.9	1,006,549	1842	3.3	267	669,979
1843	.02	539.6	835,162	1844		246.5	336,116
1845		1,247.4	707,424	1846	5,790	2,513	828,077
1847	575.8	2,739.3	818,214	1848	1,543.4	2,474	808,244
1849	2891.9	2,150	672,881	1850	⁴⁸		

Exports of Rum exported from Bengal to Australia: 1840-41, 46,405, 1841-42, 7,036, 1842-43 3,877, 1843-44 2,510 1844-55 3,173, 1845-46 9,794 and 1846-47 40,627.⁴⁹

Table 37: Imports from East Indies 1841-57 Unrefined Sugar, Rum, Molasses and Molasses.

Year	Unrefined sugar Tons	Sugar extracted from Molasses. Tons	*Molasses Tons	Rum s Gallons
1841	63,579			
1842	51,471	291	203	833,576
1843	59,044	537	532	875,465
1844	41,628	504	503	464,684
1845	62,931	678	676	520,100
1846	76,099	1,416	1,329	738,128
1847	66,169	3,939	2,763	791,165
1848	70,127	4,497	2,244	860,022
1849	63,138	10,131	1,077	862,055
1850	76,399	3,204	551	515,294
1851	65,842	6,213	672	464,343
1852	79,888	1,158	121	326,866
1853	60,983	1,389	379	297,748
1854	50,650	2,307	561	203,190
1855	36,957	1,884	7	664,968
1856	37,402	1,131	292	753,470
1857 ⁵⁰	70,277	1,416	1,086	490,843

*Molasses on importation pay Duty on the Basis of 3 pound Molasses equates 1 Sugar.

⁴⁸ P. P. 1856 Vol. LII 29-April 1856.

⁴⁹ *Select Committee Sugar and Coffee Planting 1847-48*, First Report, p. 23.

⁵⁰ P. P. (1857) Session 2 (46) XXXXIOII 499.

Table 38: UK Sugar Imported from British Possessions 1845-1864.

Year	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7.
1845	142,883	35,811				66,771	262
1846	107,607	42,260				73,252	280
1847	160,138	59,697				70,001	1,036
1848	139,866	44,316				66,477	497
1849	142,113	44,892				73,557	882
			Bengal	Madras	Bombay		
1850	129,468	50,165	56,699	8,511	655	65,865	2,657
1851	153,794	50,013	62,594	14,101	406	77,101	2,167
1852	170,397	56,103	49,151	14,085		63,237	1,956
1853	142,148	62,613	43,481	14,656	35	58,172	3,096
1854	172,154	83,109	17,903	17,879	1	35,783	3,465
1855	145,768	68,156	22,346	10,954	2	33,302	3,299
1856	140,528	82,363	32,770	23,017	1,317	57,104	4,236
1857	147,731	59,216	33,076	21,108	486	54,670	4,406
1858	174,845	54,325	23,183	12,921	31	36,135	3,580
1859	156,384	58,467	27,506	14,154	43	41,703	5,056
1860	168,780	58,186	18,249	14,452	52	32,753	5,291
1861	184,515	75,198	20,982	12,511	58	33,497	3,960
1862	193,238	34,321	5,050	10,385	2	15,888	4,932
1863	181,094	81,783	716	10,928	17	11,661	3,002
1864	163,013	52,721	24,068	11,411	77	35,576	4,832 ⁵¹
1863	178,054	49,616	6,805	14,085	1	20,171	1,877
1866	220,538	50,312	3,681	13,456	2	17,139	897
1867	191,565	29,787	910	1,210	2	2,122	1,101

*Includes Penang until 1850. Column 1 West Indies. Column 2 Mauritius
Column 3 Bengal. Column 4 Madras. Column 5 Bombay. Column 6 Combined East India.
Column 7 Ceylon, Penang and Singapore

Table 39: Sugar Exports Mauritius to India 1862-3 to 1871-2.

Year	In pounds	Long tons
1862-63	17,551,200	7,835
1863-64	19,199,598	8,571
1864-65	22,853,945	10,203
1865-66	30,708,980	13,709
1866-67	44,938,743	20,062
1867-68	51,760,761	23,107
1868-69	26,656,466	11,900
1869-70	59,209,365	26,433
1870-71	33,587,213	14,994 ⁵²

⁵¹ P. P. 1865 (235) L.843 *Imports of Sugar to UK from British West Indies, British Guiana, Mauritius and East Indies, 1845-64.*

⁵² "Sugar Exports from Mauritius to India" *The Sugar Cane* Vol. 11 No. 24. (December, 1871). p. 644.

Table 40: Extract from the 1792 Survey of the Sugar Producing Districts of Bengal, Showing the Six Major Districts Refining and Exporting Indigenous Sugars.

Amounts in cwt.		Produce of district.		Local Cons.		District Exports.	
District	Eng. Acres	Sugar	Gur	Sugar	Gur	Sugar	Gur
Sircar Sarun	5,064	4,133	17,188	128	888	2,857	8,321
Dinagepore	6,045	11,010	N/A	2,752	N/A	8,262	N/A
Burdwan	8,264	32,768	133,928	N/A	N/A	32,768	N/A
Midnapore	1,134	20,460		9,196	N/A	11,290	N/A
Beerbhoom	4,847	13,427		3,356	N/A	2,928	N/A
Jessore*	Palms	10,982		N/A	N/A	N/A	N/A
Total	25,354	92,780	151,116	15,432	888	58,105	8,321

^{53*} Jessore mainly date tree sugar.

Table 41: Quantities and Price per Ton in Calcutta of Sugar Exported to Europe, American and Great Britain 1816-17 to 1818-19.

	Destination C. 1.	Tons C. 2.	Ave. per ton.	Chin per ton. C 3.
1816-17	Britain	5,222	£24.98	£33.6
	Europe	729	£26.43	
	United States	4,890	£26.73	
1817-18	Britain	6,692	£23.33	£33.6
	Europe	1,244	£29.32	
	United States	5,174	£30.33	
1818-19	Britain	6,099	£25.59	£34.8, ⁵⁴
	Europe	4,044	£28.89	
	⁵⁵ United States	4,775	£30.57	

The value per ton in Column 2 includes sugar exported by the East India Company, who usually purchased *khand* at prices lower than that purchased by private merchants, consequently the percentage of this sugar that was probably amount of *khand* is enhanced by this factor. The stronger commercial position of the Company compared to private merchants was the factor that makes this possible. It ensured that capital was readily available in the localities from land revenue; the Company also had people on the ground in the sugar districts dealing with people directly and with middlemen.

⁵³ *E.I.S.* App. 1, pp. 180-2, Bengal Public Consultations, Abstract Statement of Sugar and Gur production in Bengal 1792.

⁵⁴ *Ibid.* App. IV, pp.35-36 Calcutta Market price of Chinese.

⁵⁵ *Ibid.* pp. 45, 46

Table 42: Volume of Sugar in the Sea Bourne Inter-Presidency Sugar Trade 1802-1821.

Year	From	To		
1802-3	Bombay	Guzerat	£107,147	
"	"	Cutch & Scind	51,543	
"	"	Tanjore	1,439	
"	Bengal	Malabar Coast	12,662	
				£172,891
1805-6	Bengal	Bombay & Malabar	£168,812	
"	Bengal	Madras & Coromandel	62,118	£230,9828
1806-7	Bengal	Bombay & Malabar	£204,533	
"	"	Madras & Coromandel	58,677	£263,210
1807-8	Bengal	Bombay & Madras		£177,063
1808-9	Bengal	Bombay & Malabar		£90,076
1809-10	Bengal	Bombay & Malabar		£79,205
1810-11	"	To Cutch & Scind	£18,903	
1810-11	Bengal	To Bombay	£59,899	
"	Bombay	To Coromandel	£1321	
"	Bombay	To Cutch and Scind	£13,233	
			Total	£103,356
1811-12	Bengal	Bombay		£30,461
1812-13	"	"		£74,296
1813-14	"	"		£80,358
1814-15	"	"		£86,420
1815-16	"	"		£46,810
1816-17	"	Bombay	£38,397	
		Madras	9,688	
			Total	£48,085
1817-18	Bengal	Bombay		£19,122
1818-19	"	"		£19,031
1819-20	"	"		£46,072
1820-21	"	"		£30,461 ⁵⁶

Table 43: Price per cwt of British Colonial and British Refined Sugar 1845-8.

Year	Jamaica		Mauritius		Bengal		Refined lumps	
	Low Brown	To fine Yellow	Low Brown	To fine Yellow	Low brown	to fine White	Low	High
1845								
January	£2.55	£3.42	£1.90	£3.30	£1.92	£3.50	£3.62	£3.70
April*	£1.90	£2.90	£1.65	£2.95	£1.35	£2.90	£3.27	£3.50
July	£2.12	£2.80	£1.77	£2.80	£1.75	£2.95	£3.37	£3.62
October	£2.30	£2.80	£1.75	£2.82	£1.80	£3.20	£3.25	£3.35
1846								
January	£1.77	£2.70	£1.82	£2.20	£1.77	£3.00	£3.20	£3.27
April	£1.87	£2.80	£1.87	£2.80	£1.82	£2.82	£3.17	£3.20
July	£1.90	£2.80	£1.90	£2.80	£1.75	£2.87	£3.27	£3.47
October	£1.60	£2.80	£1.60	£2.80	£1.75	£2.87	£3.15	£3.30
1847								
January	£2.00	£2.80	£1.80	£2.95	£2.00	£2.90	£3.25	£3.55
April	£1.75	£2.70	£1.80	£2.75	£1.75	£2.70	£3.17	£3.25
July	£1.65	£2.65	£1.65	£2.50	£1.65	£2.65	£2.80	£2.95
October	£1.40	£2.52	£1.40	£2.55	£1.40	£2.60	£2.62	£2.75
1848								
January	£1.40	£2.00	£1.30	£2.37	£1.40	£2.00	£2.20	£2.27
April	£1.40	£2.22	£1.40	£2.20	£1.40	£2.22	£2.70	£2.80
July	£1.42	£2.25	£1.40	£2.20	£1.42	£2.25	£2.67	£2.80
October	£1.37	£2.20	£1.35	£2.10	£1.37	£2.20	£2.42	£2.60 ⁵⁷

Duty lowered by £0.70 per cwt from 15th March 1845.

⁵⁶ Ibid, passim.

⁵⁷ D. Macfarlane Evans, *Commercial Crisis* (1849) pp 141-146.

Table 44. An Account of East India Company Sugar Shipments 1791-1821.

Year	Tons	FOB India	Freight	Mercantile Charges	Sale Price	Profit	Loss
1791	249	£18.72	£61.94	£4.46	£89.24	£4.12	
1792	165	31.43	58.68	5.30	106.03	10.59	
1793	1829	26.39	27.97	2.99	59.81	2.46	
1794	2879	33.73	26.00	2.67	53.5		£8.90
1795	7795	30.13	33.98	2.79	55.83		11.07
1796	4230	25.08	26.72	2.95	59.04	4.29	
1797	3544	24.04	18.85	2.86	57.40	11.65	
1798	6955	21.96	28.75*	3.28	65.80	11.81	
1799	2334	17.52	26.52*	2.65	53.07	6.37	
1800	5553	21.69	39.73*	2.22	44.40		19.25
1801	2790	21.80	37.77*	2.63	52.76		9.45
1802	2789	19.61	35.52	1.83	36.62		20.35
1803	1376	29.26	38.64	2.06	41.33		28.64
1803	1376	29.26	38.64	2.06	41.33		28.64
1894	3781	25.92	26.80	2.75	55.02		0.45
1805	5137	26.75	33.82	2.86	57.36		6.08
1806	3290	25.17	37.38	2.19	43.94		20.81
1807	5275	25.56	37.47	1.92	38.51		26.44
1808	2422	17.16	45.75	1.81	36.30		28.43
1609	1581	31.44	41.57	2.26	43.48		31.8
1810	2027	23.36	26.9	2.34	46.86		5.74
1811	91	22.38	17.86	1.93	38.60		3.57
1812	3380	23.06	35.11	2.29	46.07		14.40
1813	2378	20.49	32.45	3.12	62.49	6.43	
1814	2127	21.67	25.05	3.98	79.69	28.99	
1815	166	25.92	18.21	2.56	51.26	4.57	
1816	947	29.46	26.94	2.16	43.30		15.27
1817	139	29.08	18.79	2.36	47.32		2.91
1818	954	32.12	24.35	2.30	46.18		12.59
1819	1038	29.52	25.65	1.94	38.79		18.32
1820	916	31.23	12.75	1.82	36.42		9.20
1821	1986	28.64	9.22	1.44	28.88	⁵⁸	10.43

Table 45 Selections of Average Weekly Wages in Britain 1810-1870.

	1810	1820	1833	1836	1841	1849	1859	1870
A	£1.45	£1.46	£1.35	£1.44	£1.48	£1.50	£1.50	£1.65
B	£1.00	£0.93	£0.95	£0.96	£0.97	£1.00	£1.00	£1.05
C	£1.70	£1.60	£1.42	£1.36	£1.25	£1.20	£1.31	£1.50
D	£0.81	£0.76	£0.82	£0.74	£0.62	£0.71	£0.73	£0.80
E	£0.51	£0.53	£0.42	£0.43	£0.40	£0.43	£0.46	£0.60
F	£1.40	£1.38	£1.33	£1.46	£1.30	£1.45	£1.71	£1.75
G	£0.40	£0.47	£0.53	£0.55	£0.49	£0.48	£0.58	£0.72

A=London Building Trade Artisan. B=London Building Trade Labourer. Manchester and District: C= Artisan Spinners. D=Textile Unskilled. E=Textile Female. F=Engineering Tradesmen Manchester. G=Agricultural Workers General Average.⁵⁹

⁵⁸ Ibid, App. iv p. 34.

⁵⁹ Arthur Bowley, *Wages in the United Kingdom in the Nineteenth Century*, (Cambridge 1900), passim, and E. H. Hunt *Regional Wage Variations in Britain 1850-1914* (Oxford 1973) passim

Appendix 2

Sugar Agreement Between Halwais (sugar boilers) and East India Company 1793.

Engagements of Mr. _____ with Mr. John Cheap, Resident Sonamukhi for the delivery of _____ maunds on account of the Hon'ble Company.

I agree to deliver at the Cootey of _____ maunds of sugar, at the price, and upon the conditions hereinafter specified.

The sugar to be of strong grain, clean and dry, the price of the awul, or first sort, is settled at Srs. _____ p. Maund of 60 sicca weight of the seer, agreeable to which muster, my delivery shall be made.

When I deliver my sugar, it shall be prized, taking the awul muster as a standard, and according to such valuation my amount shall be credited.

If upon inspection my sugar is ferreted, I bind myself to substitute for it sugar of good quality which when approved of, I shall then be at liberty to carry away what was ferreted. Sugar which is soft and wet, or of a bad colour, or quality shall not be tendered.

Should I make a tender of sugars that have been adulterated with Raw Sugars (Doluah and Bourra) upon sufficient proof being given, I subject myself to pay a penalty of 59 percent, upon the whole amount of the advances I may have received.

The advances to be made at the rate of Sa RS. _____ Per maund, at the following periods -:

½ when the engagement is signed

¼ 1 month afterwards, and

¼ 1 month after the date of the 2d advance.

At the time I make my deliveries, the Sugar to be inspected and prized, and whatever it may be valued at over and above the rate advanced, shall be paid in ready money on the day of prizing.

Whatever advances I receive, shall be wrote on my Haut chittie* as well as my deliveries of sugar when approved of.

The deliveries to be made at _____ Factory from the 1st Choytree (March-April) to 30 Bysack (April-may) 1201 B. S. at the period stated underneath _____ After the Expiration of these dates, I subject myself to a penalty of 25 percent, upon the deficient maunds, valued at the awul, or first sugar's price, to be aid by me in ready money, without fail or litigation.

I hereby acknowledge the receipt of the first advance and bind myself to abide by the considerations of this agreement.

Periods for delivery

Witness

Resident Soonamukhi

J. Cheap

1

¹ Bengal Board of Trade Consultations 21-11-1793.

Appendix 3

Pre-industrial Sugar Technology and Manufacture

The traditional process of sugar manufacture is an important part of the story of East India sugar, as is shown above, indigenous sugar was by far the largest component of all sugar exports from the sub-continent to Britain and the European continent. This appendix examines the indigenous sugar making process from the point where juice was extracted and boiled to *gur* or *rab*, crude raw sugar, explaining something of the work of the *halwais*, (sugar boilers), the makers of the fine white to yellow sugars that sold in the markets of Europe and Asia. The technology used to express juice in the various regions of northeast India and Madras, is also part of this discussion.

The indigenous industry did not invest in expensive infrastructure, such as stone built sugarhouses or buildings to house steam engines, iron crushing mills, clarifying cistern, evaporators or rum stills. Instead, the cultivator used low-cost and often portable equipment, the origins of which were centuries old. A variety of cane crushing mills came into use in India, some of local origins others endogenous in their origin; it was not unusual for a particular technology to be isolated to one area or district.

The most widely used mill was the *kolhu*; a mill often owned cooperatively or hired out by a wealthy cultivator for a fee or a share of the produce. This mill, still the most common type in the mid-nineteenth century, was in effect a mortar and pestle,

and in use throughout much of the sugar producing regions of northeast India.² The mortar made from a hollowed out tree stump or carved from stone, and the pestle, often the trunk of a tamarind tree, with one end crafted into a bulbous shape. Bullocks providing the motive power and the pestle turned inside the mortar. The cane was cut into short sections before insertion, and the action of the mill reduced the cane to pulp, with the extracted juice draining through an aperture into a pot or *nand* under the mill (see illustration page 351).³ The process of crushing cane in the *kolhu* consisted of two separate operations, one of cutting the cane into short lengths and stacking it into baskets, usually sufficient to feed the mill for two hours. At this point, it became necessary to stop and clean out the accumulated trash. The second section had a bullock driver and a person to insert the cane into the mill; five to seven people were involved in the operation.⁴

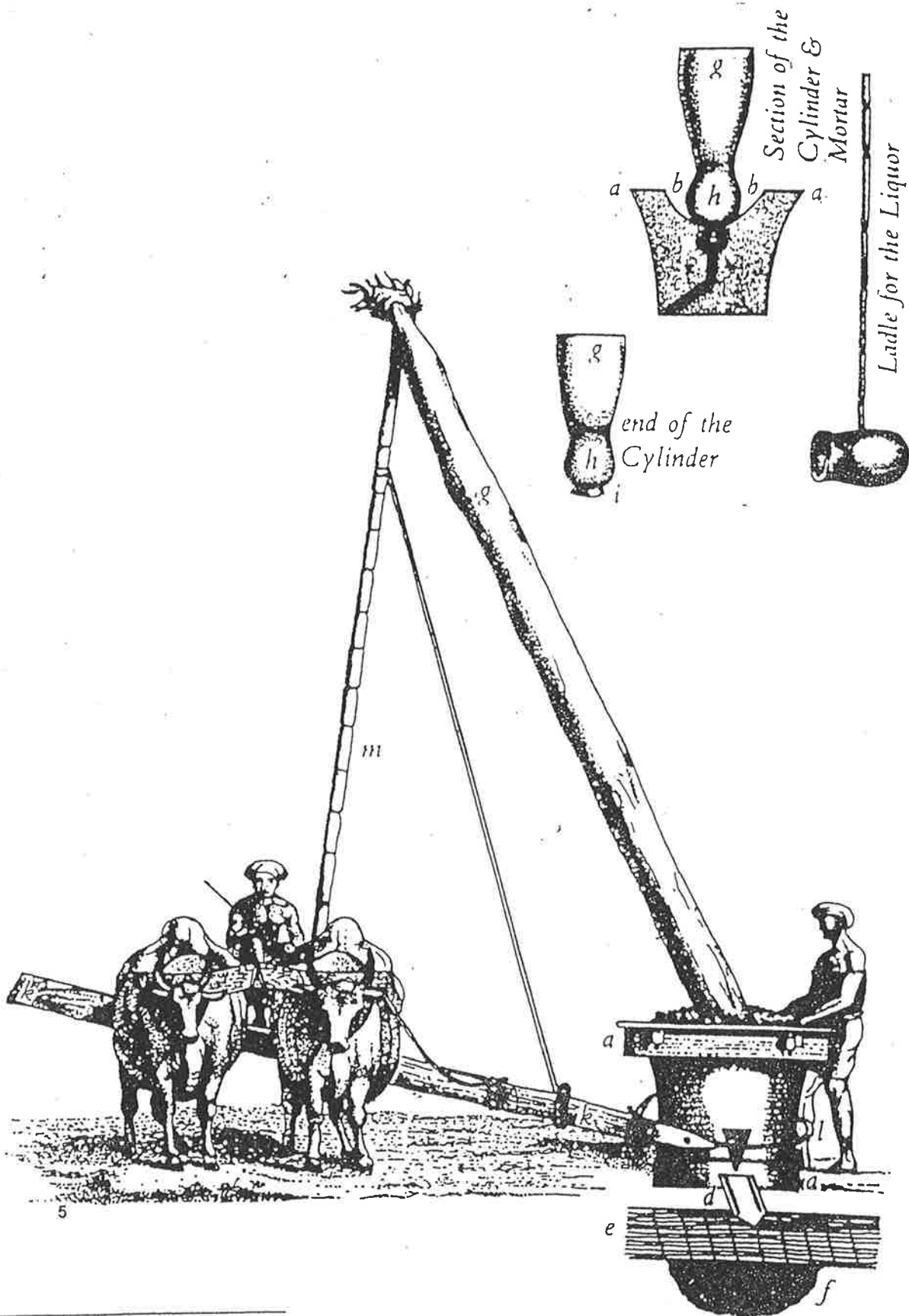
A smaller mill with two horizontal grooved rollers, turned manually by handles, the upper and lower roller turned in opposite directions, required four operators, two on the handles, one feeding the mill and another handling and twisting the canes as they emerged from the rollers. This mill appears to have been most commonly in use in the Burdwan area where softer varieties of cane were generally grown

² S. M. Hadi, *The Sugarcane Industry of the United Province of Agra and Oudh*, (Allahabad, 1902), pp. 54-55. The author mentions three varieties of the *kolhu*; a stone one used in eastern districts, a wooden mill used in Oudh and eastern Doad and the Gorakhpur wooden mill. For what is perhaps the best and most detailed description of the *kolhu* see this publication pp. 55-61.

³ John and Christian Daniels, "The Origin of the Sugarcane roller Mill, *Technology and Culture*, Vol., 29 No. 3 (1988), pp. 493-535. It is suggested that the difference between roller technology and the mortar and pestle technology may be explained by the relationship between mills and irrigation technology. Local carpenters made both; where there was a wheel type technology for irrigation i.e. the Persian wheel, roller and gear technology were also part of the carpenter's skill range. In those parts of India where irrigation was with sling and bucket, the simpler mortar technology prevailed. pp. 508-9 Note 65.

⁴ J. H. Mackintosh, *Report of the Settlement Operations in the District of Azamgarh*, (Allahabad, 1881). p.126, paragraph 436.

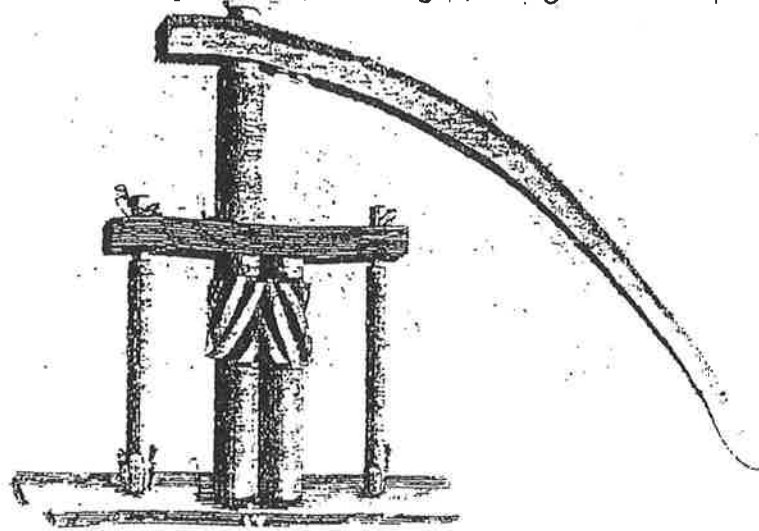
Kolhu Mortar and Pestle Mill:



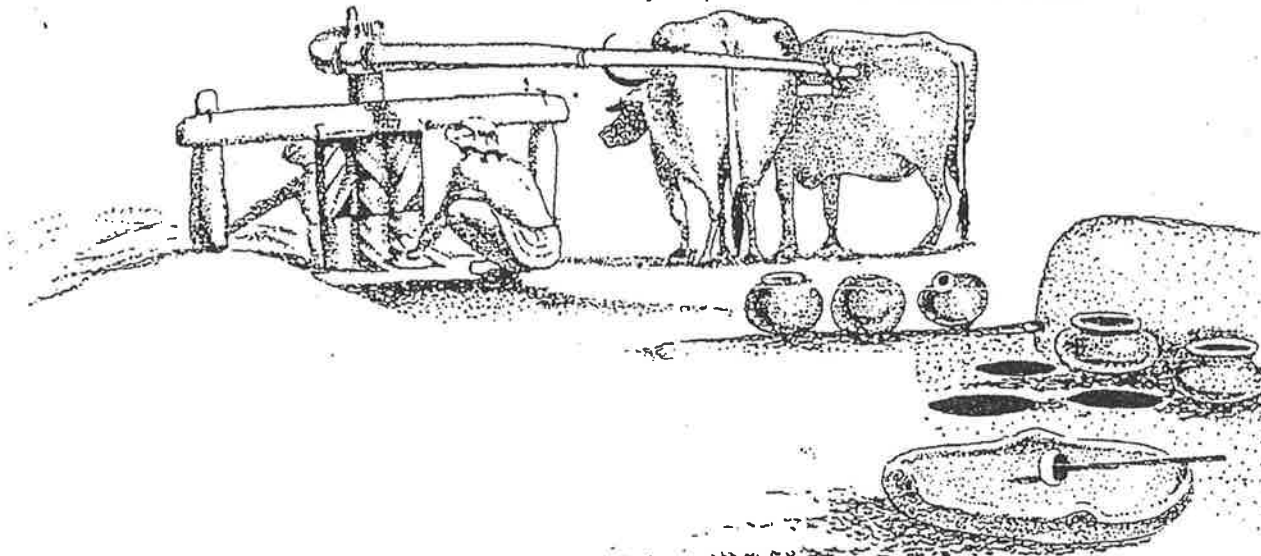
⁵ William Crooke, A Glossary of North Indian Peasant Life; (Delhi, 1989).



Hand operated roller mill: Burdwan, Kishnagur, Hooghli and 24 pargannahs



⁶ Vertical roller mill Fandipur. Probably imported from Western India



⁷Charki: three roller mill Central Provinces

⁶ Noel Deerr, *History Vol. 1*

⁷ William Crooke, (Delhi, 1989).

(Sketch I, page 352 above)⁸ A third mill, largely confined to the Fureedpore district, was introduced from Western India, it consisted of two vertical rollers connected by a worm type drive, like the kolhu, it was driven by bullocks (sketch 2, page 352).⁹

Two other mills were in use in the western and southern districts of the Central Provinces. In the southern districts, a bullock mill called the Ghanra was common; it had two vertical wooden rollers. This mill was set into the ground with the tops of the rollers just above ground level. Because of this, the cane was cut into short lengths of about a metre to be fed through the rollers. One roller was much bigger than the others, bullocks harnessed to a crossbeam turned the large roller, wooden teeth mortised into each roller interlocked and effected the rotation of all three rollers.

The mill of the western districts of the Central provinces was the *Charki*, a three-roller mill, some of which had rollers 1.3 metres long, the central roller had a larger diameter and was fitted with a series of teeth through which the two smaller rollers were driven; bullock power also drove this mill (sketch 3, page 352). Apparently, this mill needed to be constantly lubricated with castor oil; the loud rumbling of the rollers could apparently be heard for some distance.¹⁰

The slow extraction of cane juice with both the small Burdwan roller mill and the *kolhu*, combined with a general low level of cleanliness to both the mills and the pots receiving the juice, frequently led to fermentation.¹¹ There was also a correlation between action of a mortar and pestle action of the kolhu and the mineral

⁸ S. H. Robinson, (1849.), p. 14. This small mill was predominantly in use in the areas near Calcutta, Hooghli and Burdwan where irrigation was widespread and softer varieties of cane were grown.

⁹ S. H. Robinson (1849). p. 49.

¹⁰ J. B. Fuller, *Sugar Production in the Central Provinces*, (1883), p. 13 paragraph 16.

¹¹ *E.I.S App.1* pp. 211-212, Bengal Commercial Consultations, 6-2-1793 William Fitzmaurice's Memorial. J. H. Mackintosh, *Settlement Azamgarh*, (Allahabad, 1881). p.126, paragraph 444. The cultivators of Azamgarh were aware of the problems of fermentation due to slow extraction of juice. The problem was made worse during humid weather and when strong easterly winds blew.

and vegetable impurities expressed with the juice. These impurities hindered crystallisation; and the problem was made worse by the almost complete lack of defecation or cleansing of the juice before boiling tended to be minimal.¹² When impurities are left in juice for more than thirty minutes they contribute to an increase in levulose or grape sugar, a chemical reaction that prevents the juice from crystallizing fully.

After expressing the juice, the cultivators boiled it until they felt a satisfactory evaporation of the water content was reached. The raw sugar produced was called by a variety of names, such as *gur*, *rab* or *behle*. The juice was boiled in vessels made of clay; metal became more common later in this period. Cane trash or wood was usually the fuel used for boiling to *gur*, however, when the kolhu was the mill, its mortar and pestle action crushed the cane to pulp rendering it unsuitable for fuel, consequently, cane tops or wood were then used.

The refined indigenous sugar had many variations, for the purpose this discussion of the refinement of *chini*, *shakkar* and other sugars, the process common to Azamgarh has been chosen, for *pakki chini* it is the method common to the Jessore district; two regions that produced much of the sugars for the export trade during the nineteenth century.

Initially the raw *gur* or *rab* was brought to the boil, and any impurities skimmed off, the liquid when adjudged ready was transferred to a second pan. Here the sugar boiler added a gelatinous mass called *dulla*, obtained from the roots of a hibiscus plant, which acted in the same manner a bullocks blood used in contemporary

¹² George P. Meade, *Spencer-Meade Cane Sugar Handbook*, (New York, 1964) p. 61. The kolhu probably expressed more juice than the lighter roller mills used in other regions of India. The additional pressure of the kolhu, however, easily ruptures the sucrose cell parenchyma as it did other cells containing impurities.

Britain, it acted as a coagulant bringing much of the impurities to the surface, where they were removed with a wooden spatula. When manufacturing sugar consumed by lower castes, *rab* was boiled from 3 to 5 hours, depending on the type of cane and its condition at harvest, some bruised castor seed were thrown into the boiling mass toward the end of this process, when adjudged ready, the syrup had the consistency of a thick, black semi-solid mass. At this point it was removed from the fire and allowed to cool, while cooling the sugar was beaten for two or three hours with tool resembling a wooden mallet or club to assist crystallisation, and when completely cool decanted into earthenware jars; the state in which it was sold.

Rab could also be value added by refining it to *Katchcht chini*. The sugar maker would decant the raw sugar into vats with outlet holes to allow the molasses to drain, or the *rab* could be left in bags and the drainage assisted by placing heavy lumps of dried clay over the bags of raw sugar. After draining it was boiled and skimmed, and then allowed to cool, when cool a covering of an aquatic weed called *siwar* (*Hydrilla verticillata*), was applied to a depth of 75 to 100 millimetres. This cleansing process took from 20 to 30 days; the sugar became white as the water from the *siwar* percolated through cleansing it of the remaining molasses (*chota*). In the final stage of the process, the *Katchcht chini* was spread over a mound covered by sacking, and trodden into a fine powder, a process that took 2 days for each batch, it was then packed into bags for export.

Also derived from *rab* or *gur* was *Shakkar*: in this process sacks of raw sugar were stacked on a rush covered raised platform, the molasses were squeezed from the sugar by the weight of large lumps of dried clay about 40 kilograms each, the

molasses drained into earthenware containers beneath the platform. The semi-refined sugar that remained was damp and light brown, similar to muscovado. When the market allowed *Shakkar* was refined further into chini; this usually led to around half of its bulk becoming molasses, these, however, could be sold for direct consumption or distilled to *toddy* or *arrack*.¹³

Pakki chini was another refined sugar frequently sold on the export markets, and usually made by professional refiners. The cane or palm *gur* from which this sugar was refined received similar treatment to the *Katchcht chini*. After draining, a further boiling and skimming cleansed the syrup of impurities; the first drainings of molasses was usually boiled again, and this produced additional *paka chini*. The liquid after undergoing a second boiling and further straining, was decanted into flat basins to cool. After cooling, the raw sugar was decanted into shallow containers with drain holes and cleansed of molasses by the use of aquatic weed. Very little of the original *gur* was lost in the process, even the poorest drainings, called in some regions *Chita gur* had a market among the poorer castes.

¹³ Ibid, para.454, p. 130-132.

Appendix 4

Table 1: Sugar Factory Locations in Eastern and Southern India Showing Proprietor, and Machinery were this information is available.

Proprietor	District Parghanah.	Technology	
T.S. Robinson	Burdwan	Iron Mills, S/Eng.	1
Dr Keith Scott	Gowhatti, Assam	Iron Mill S/Eng.	1
Gladstone-Wylie	Chaugachha Jessore	S/Eng. V/pans	1
Dwarkanath Tagore	Syllidah	Iron Mill S/Eng.	1
H. N Kemshead	Jessore Burdwan	S/Eng. V/pans 3	3
A. Crooke	Jummoa Tirhut	Iron Mill S/Eng. Wetzel pan	1
L. Wray	Gorakhpur	Iron Mill S/Eng Wetzal	1
J. C. Abbott	Bogra	S/Eng	1
Tirhut C. 1848	Parghanah	Village	1
Singheea	Bisareh	Chuk Saleh Singheea	1
Deoreea	Ditto	Deoreea	1
Nurawah	Moorwah Khoord	Nurawah	1
Surya	Ruttee	Kuruhra	1
Buhrampoor	Bureyl	Othur	1
Puriharpoor	Puriharpoor Mowasin	Puriharpoor Gowseeputree	1
Belsund	Bubra Zillah Toorkee	Belsund kulan	1
Byjnathpoor	Tureanee	Byfnathpoor	1
Shirkhundeaa	Ditto	Shirkhundeaa	1
Doomra	Tirsuth	Tulkapoor Doomra	1
Pundowl	Hatte	Sagupoor	1
Runyam	Oawan	Belowan	1
	Ahis	Hatee	1
Himee	Himee	Burgawan	1
Bisuhureea	Ditto	Bisuhureea ¹⁴	1
Sarun Factories	Circa 1854		
Bara Seeraha	Myseir		1
Pureywa	"		1
Raypoor	"		1
Telureea	"		1
Amooa	"		1
Jumooarwan	"		1
Peeprah	Bubra		1
Toorlowulleea	"		1
Moleeheree,	"		1
Bhakhuruha	"	¹⁵	1

¹⁴ A. Wyatt, *Geographical and Statistical Report of the District of Tirhoot* (Calcutta, 1848).

¹⁵ A. Wyatt, *Statistics of the District of Sarun Consisting of the Sircars of Sarun and Champaran*, (Calcutta, 1854).

Table 1 Appendix 3 Continued.

Proprietor	Location	Technology	
	Rosa Shajanapur	S/ Eng. Gur refinery*	1
Hardman-Howarth	Cossipore	S/eng. V/Pans	1
Bagshaw	Cossipore	S/Eng. V/Pans	1
Bedford	Bellaghatta	S/Eng. V/Pan	1
Andrew Sym	Padruana	W/I Mill, khand.	1
	Azizpur	N/A	1
	Mothari	"	1
	Seeraha	"	1
	Barria Chaka	"	1
	Birdpur	"	1
	Belsund	"	1
	Azizpur	"	1
	Mothari	"	1
T. & H. Murray	Jessore	S/Eng. V/Pan	1
Donald Mcinnes	Seibpore	S/Eng.	1
	Ballicoli, NWP	S/Eng. V/Pan	1
Newman	Tahirpur Jessore	S/Eng. V/ Pan	1
Turner & Cardogan	Cossipore	S/Eng. V/Pan	1
Madras			
Mackenzie	Bimlipatam Vizigapatam	S/Eng. V/Pan*	1
Parry & Co.	Cuddalore	Palm Gur Refinery S/Eng.	1
Binny & Co.	Asaka	Iron Mills S/Eng, 2 V/Pans*	1
	Bandelpollium	S/Eng, V/Pan*	1
	Kalakuurchi	S/Eng. V/Pan&	1
	Neliuppaam	S/Eng. 2 V/Pan*s	1
Norman Morrison	Venkatagir	S/Eng open pan*s	1
" "	Palimore	" " "	1
James Rundle	Razole		1
	Tirhut (below)	S/Eng.	1
		Total	78

All plants were equipped with steam engines some with horizontal iron crushing mills, 18 are known to have Vacuum pans and many more had Wetzal or Gadesden evaporators or trains of open pans, some may have had a Knellor evaporation systems. * Distilling arrack.

A Further factory equipped with steam engines was located in Tirhut, its actual location is unknown the existence of this plant is mentioned in: W. W. Hunter.¹⁶

¹⁶ The locations of these factories and some indication of the technology in use was found in: Hilton Brown Parry's of Madras (1954), *Select Committee Sugar and Coffee 1847-48, First, Third and Fourth Reports*, W. W. Hunter *A Statistical Account of Bengal Vol. XIII Tirhut and Champaran* (London, 1877), Leonard Wray, *The Practical Sugar Planter*, (London, 1848); A. Wyatt, *Geographical and Statistical Report of the District of Tirhoot* (Calcutta, 1848), and A. Wyatt, *Statistics of the District of Sarun Consisting of the Sircars of Sarun and Champaran*, (Calcutta, 1854).

Table 2: Mercantile Houses in Britain, India, Ceylon and Mauritius that became insolvent during the Commercial Crisis of 1847-8.

Name of Establishment	Branch of trade	Office
1 Akland, Boyd and Co.,	Merchants	Ceylon *
2 Barclay Bros.	Mauritius Trade	London ****
3 Boyds & Thomas	East India merchants	London
4 Brightman J. & Co.,	Ditto	Ditto
5 Barton, Irlam & Higginson	E/ West India merchants	Ditto
6 Brownrigg & Co.,	East India merchants	Ditto
7 Birley, Corrie & Co.,	Ditto	Manchester
8 " "	Ditto	Calcutta **
9 Cockerell, Larpent & Co.,	Ditto	London
10 Cargill, Headlam & Co.,	Ditto	Newcastle upon Tyne
11 Cockerell & Co.,	Ditto	Calcutta **
12 Church & Lake & Co.,	Ditto	Ditto
13 Colville, Gilmore & Co.,	Ditto	Ditto
14 Crooke H. & A.	Ditto	Ditto
15 Carr, Tagore & Co.,	Ditto	Ditto
16 Ewing, Anderson & Co.,	Ditto	Manchester
17 Ewing & Co.	Ditto	Calcutta **
18 Fraser, W. Tulloch	Ditto	London
19 Farbridge R. & S.	E/Ind. & Russian Trade	Manchester
20 Ford B. T. & Co.,	East India Trade	Calcutta **
21 Gouger & Stewart	Ditto	London
22 Gemmel Bros.	Ditto	Glasgow
23 Hughesdon Bros.	Ditto	Calcutta **
24 Howarth Hardman & Co.,	Ditto	Ditto
25 Hickey, Bailey & Co.,	Ditto	Ditto
26 Johnstone, Cole & Co.,	Ditto	London
27 Kelsall & co.,	Ditto	London & Manchester
28 Kelsal & co.,	Ditto	Calcutta **
29 Lyall Bros.	Ditto	London
30 Lackersteen A. A.	Ditto	Ditto
31 Lackersteen & Crake	Ditto	Ditto
32 Lysaght, Smithett & Co.,	Ditto	Ditto
33 Lake, Calrow & Co.	Ditto	Liverpool
34 Livingstone & Co.,	Ditto	Ditto
35 Lyall, Matheson & Co.,	Ditto	Calcutta **
36 Lackersteen Bros.	Ditto	Ditto**
37 Lake, Hammell & Co.,	Ditto	Ditto**
38 Livingstone & Co.,	Ditto	Ditto**
39 Layard H. L. & Co.,	Merchants	Ceylon *
40 Murray T & H	East India Trade	Liverpool
41 McKenzie D Jun.	Ditto	Glasgow
42 Owen, Allhusen & Co.,	Ditto	Calcutta **

Table 2 Continued.

43 Oswald, Sea & Co.,	East India Trade	Calcutta**
44 Phillips, Lawrence & Sons	Ditto	London
45 Phillips, Samuel & Co.,	Ditto	Ditto
46 Perkins, Schlusser & Mullens	East India & Baltic Trade	Ditto
47 Robinson E	Mauritius Trade	London ****
48 Reid, Irvine & Co.,	Ditto	Ditto
49 Rickards, Little & Co.,	East India Trade	Ditto
50 Rider, Wienholt & Co.,	Ditto	Ditto
51 Scott, Bell & Co.,	Ditto	Ditto
52 Saunders, May, & Fordyce.,	Ditto	Calcutta **
53 Sherman, Mullens & Co.,	Ditto	Ditto**
54 Smith, Cowell & Co.,	Ditto	Ditto**
55 Thurburn & Co.,	Ditto	London
56 Union Bank of Calcutta	Bankers	Calcutta **
57 Venay, Cardoza & Co.,	East India Trade	Madras ***
58 Weber & Co.,	Ditto	London

** 22 of these commercial houses or banks were situated in Calcutta

* 2 in Ceylon, ***1 in Madras and **** 2 in Mauritius.¹⁷

¹⁷ Secret Select Committee to Inquire into Commercial Distress 1848. Passim and D. Morier Evans, *The Commercial Crisis 1837-48: Facts and Figures*, (London 1849), Appendix p. XCII-CI.

Appendix 5

Table 1: Measurements of Sugar Content as calculated by Professors Brande and Cooper 1847.

Description of sugar	1	2	3	4	5	6
Havana fine white	1.1158	97.90	97.0	3.0	1.5	1.75
" Good white	1.1161	98.00	97.8	2.2	1.0	1.0
" Fine yellow	1.1136	95.00	95.5	4.5	1.25	2.25
" Good yellow	1.1111	93.75	94.5	5.5	2.5	0.73
Bengal fine crystal wh.*	1.1111	92.75	93.2	6.8	2.0	1.5
" " " yellow*	1.1135	93.00	90.0	10.0	3.0	4.0
" Fine white	1.1121	91.50	90.8	9.2	3.0	4.0
" Low yellow	1.1128	92.00	89.5	10.5	1.0	3.0
Demerara vac/pan	1.1111	92.75	93.5	6.5	1.0	3.0
Jamaica fine white	1.1128	93.25	92.0	8.0	1.5	2.0
Antigua Average	1.1123	89.75	89.5	10.5	3.5	3.7
Trinidad low muscovado	1.1105	89.50	85.5	14.5	2.5	3.2
Manila white	1.1111	91.75	94.0	6.0	4.5	3.7
" Brown	1.1117	89.50	90.2	9.8	3.2	3.7
China, white	1.1112	89.00	87.0	13.0	4.0	4.0
Behea, fine white	1.1111	91.50	94.0	6.0	2.5	2.7
" Good whiter	1.1123	92.00	94.5	5.5	3.0	3.5
" Brown	1.1157	97.59	93.0	7.0	4.5	4.5
Java Standard sample	1.1131	95.50	95.0	5.0	1.5	1.7
Single Refined	1.1141	100.0				
Loaf Double refined	1.1171	100.0				
" Single "	1.1172	-----				
Antigua molasses	1.1012					18

1. Specific gravity of sugar in test sample when converted to syrup. 2. Crystallisable sugar. 3. Percentage of Crystallisable sugar when acted upon by solvents. 4. Percentage of Uncrystallisable sugar when acted upon by solvents. 5. Loss in weight by drying at 212 degree F. 6. Gain by moisture.

The difference between the laboratory test and the saccharometers were between+ 4 % and -0.75 %. *These two grades are of European manufacture.

¹⁸ *Select Committee Sugar and Coffee 1847-8, Forth Report, Appendix 1, p.1.*

Table 2 Content of raw sugars compiled in 1881 by Wigner and Harland for the food collection of the Bethnal Green Museum.

Source	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5
Dominica	88.3	3.36	1.22	4.95	2.17
Grenada	87.0	3.61	0.90	4.74	3.75
Guatemala	82.4	5.48	0.78	6.30	5.04
Havana	91.9	2.98	0.72	1.70	2.70
Jamaica	90.4	3.47	0.36	4.22	1.55
Porto Rico	87.5	4.84	0.81	4.25	2.60
St Kitts	88.7	4.18	1.02	2.79	3.21
St Lucia	84.2	5.38	1.32	2.39	6.71
St Vincent	92.5	3.61	0.63	0.81	2.45
Surinam	86.8	4.31	2.18	5.27	1.34
Trinidad	88.0	5.14	0.96	4.23	1.67
Grainy Peruvian	94.8	1.44	0.60	1.02	2.14
Cheney	87.4	3.18	1.33	2.74	5.35
China	72.50	9.19	1.80	6.76	9.75
Banares	94.50	2.6	1.50	0.98	0.39
E. I Date	86.00	2.19	2.88	6.04	2.89
White Java	99.2	0.20	0.20	0.40	Trace
Manila Unclayed	82.0	6.79	2.00	5.97	3.24
Refined					T
Tate's Crystals	99.2	None	Trace	Trace	None
French Pulverised	99.7	Trace	0.10	0.20	"
Martineau	99.7	"	0.10	0.20	"
Duncan's Granulated	99.8	"	0.10	0.10	"
Say's Loaves	99.8	"	0.10	0.10	"
Martineau's Tablets	99.8	None	0.10	0.10	"
Boyd's Titlers	99.7	Trace	0.10	0.20	"
Beet Loaf sugar	99.6	"	0.15	0.25	"
" Crystals	99.9	None	Trace	Trace	"

Column 1 Crystallisable.

Column 2 Un-crystallisable.

Column 3 Ash.

Column 4 Moisture content.

Column 5 Organic matter.

19

¹⁹ Warnford Charles Lock, Wigner G. W. and Harland R. H. *Sugar Growing and Refining*. (London, 1882), p. 608.

Table 3: Composition of Commercial Sugars C. 1900.

Raw sugar	Crystallisable	Uncrystallisable.	Ash	Moisture	Organic
Barbados	91.55	2.50	0.70	3.70	1.55
Jamaica	91.90	2.80	0.72	3.55	1.03
Trinidad	87.30	4.80	1.30	3.86	2.74
Brazil Musco.	91.50	1.10	1.24	3.30	2.86
Java	98.20	0.75	0.20	0.37	0.48
Manila	76.00	8.70	4.50	4.00	7.00
Mauritius	84.5	3.63	3.38	3.30	5.19
India Palm Jag	83.20	2.20	4.00	5.94	4.66
" "	77.00	6.80	5.66	5.70	4.84
India Cane Jag.	79.00	7.13	3.37	6.46	4.04
" " "	64.00	16.40	2.95	7.92	8.73
Sugar beet	90.05	Nil	2.93	3.38	3.64
"	91.30	Nil	2.18	3.31	3.21
"	92.01	Trace	1.95	3.09	2.93
"	94.30	Nil	1.26	2.26	2.18
"	96.10	Nil	0.93	1.50	1.47
Refined sugar					
Granulated	99.95	Nil	Trace	Traces	Nil
Cube sugar	99.90	Nil	Trace	Traces	Nil
Crystals	99.90	Nil	Trace	Traces	Nil

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²⁰ J. A. R. Newlands and Benjamin E. R. Newlands, *Sugar: A Handbook for Planters and Refiners*, (London, 1909), p. 712.

Appendix 6

Value Adding of Sugar in Colonial Sugarhouses c.1840-1850.

The process began with the raw sugar, in India *gur*, being mixed with water and the pumped into steam-heated clarifiers. Here it was heated to about 80 C, limewater was added to assist in the separation of impurities, and the low heat combined with the action of lime, allowed the largest of the impurities to separate from the cane juice. The clearer liquid was then drained into a steam-heated pan and the temperature increased, as the temperature rose, further smaller impurities were skimmed off. After this it was strained through a blanket filter leaving almost clear juice, which could now be further evaporated, in a steam heated open pan or in some cases a vacuum pan, until it achieved the consistency of about 24 Baume. At this point, the now, highly concentrated liquor, was sucked into a vacuum pan and evaporated under vacuum until the desired point of crystallisation reached. From the vacuum pan, it was decanted into a vessel with a steam-heated jacket and agitated either mechanically or by hand, thus achieving further growth in crystal size. At the optimum point of crystallisation, the still hot crystalline mass was decanted into small carrying vessels, which were emptied into the conical curing moulds. These moulds had a hole at the pointed end, which initially was blocked, the muscovado sugar was allowed to cool, and as it did, the molasses drained to the bottom. When the mould showed indications of being cured, the plug of paper or rag blocking the hole was removed allowing the molasses to drain away, leaving a brown crystalline sugar.²¹

²¹ W. W. Hunter Vol. ii, *Nadiya and Jessore* (1875) pp. 288-289.

Should the manufacturer wish to value-add the muscovado at plantation level, he could do this through liquoring or claying the sugar. Claying was a simple process: the top of the sugar in the mould was made flat, and any loose sugar was pressed until firm. Pipe clay was then mixed with water to a consistency similar to wet concrete, this was spread on top of the mould to a depth of about 25 millimetres. The moisture in the clay slowly percolated through the mould, carrying away some of the mother liquid (molasses) clinging to the crystals, leaving some of the sugar, the top half to two-thirds, a cleaner crystalline sugar, the sugar at or near the bottom of the mould usually remained quite dark. Prior to the changes to the Act of 1845 (chapter six above), some refineries in Bengal and Madras subjected their muscovado to a process called liquoring, similar to claying but more effective.²² In this process, clay was substituted by a solution of clean white sugar saturated in water, which in the same manner as pipe clay, was spread over the top of the mould. Saturated sugar contained more water than clay, consequently the whitening process, if carried out correctly, tended to be more complete.²³

The clayed or liquored sugar, when tipped out from the moulds, in the same manners as with clayed sugar, tended to be whitest at the broad or top of the mould. In Cuba and Brazil this whiter portion was cut off and sold as high quality clayed, the dark end was either sold as muscovado, or the mixed some of the lighter top portions

²² William Thomas Brande, *Chemistry*, (London, 1819) p. 358. Brande discusses and criticises the use of saturated white sugar for liquoring, a practice already in use in France by 1819.

²³ John Scoffern, *The Manufacture of Sugar in the Colonies and at Home*, (London, 1845). pp. 92-3. The process described can be seen in close detail in this publication. *Select Committee Sugar and Coffee* First Report, p. 86, Hardman's explanation was not given in detail, the indications, however, were that the liquoring process was used at Cossipore.

to enhance the sugars' value.²⁴ In the dryer climate of Bengal, liquored or clayed sugar could be sun dried for a few days prior to bagging, thus ensuring a low moisture content. This enabled the factories producing industrialised sugar to produce high-grade muscovado, which lost less value during transit than damp muscovadoes, i.e. it did not deliquesce. This practice of liquoring, mixing and drying prevailed at all the modern industrial plants in the sub-continent. The effects of the changes of 1845 are evident from the evidence of Laurence Hardman. He pointed out that the net return on sugar, now classified, as "equal to white clayed," or "equal to single refined," was £0.17 per ton above the return on good quality muscovado such as Cossipore yellow.²⁵ This small differential could not make up for the loss in weight or the additional labour, particularly in view of the poor use these installations made of by-products (chapter 6 above).

²⁴ *Ibid*, Third Report, Appendix 6, Report submitted by H. Crosley, refining engineer, on the quality of imported sugar.

²⁵ *Ibid*, First Report, Evidence of l Hardman pp. 85-6.