

**AN ECONOMIC ANALYSIS OF THE ORIGIN AND
GROWTH OF MODERN JUTE INDUSTRY
IN BENGAL DURING 1855 – 1914**

A Thesis submitted for the award of Ph.D. Degree
in Commerce of the University of North Bengal



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Preface

Before starting with this project, I was impatient to do some research work on my subject economics. But I could not decide on about the topic I should work on. This work would have been impossible without my friend Dr. Debabrata Mitra, Reader, N.B.U. He introduced me to my guide Dr. Indrajit Ray whose scholarship and industry made these three years' work interesting and possible for me. On his advice, I have chosen my subject and his invaluable help can hardly be expressed through words. He not only guided me through my project but counselled me as a philosopher when panic gradually set in over scale of the material that had taken on. My serendipidity owes unaccountable debts of gratitude to Dr. Ray as brought rays of hope in my life.

For invaluable help in deciphering the mutilated papers from basement of National Library, I would like to thank the staff of that library. The staffs of Commerce Department of N.B.U have given me assistance whenever asked for. The support from Indian Jute Mills Association in collecting data on history of jute industry was wonderful.

At the end, I thank my parents for lending their support to me as working on a project puts pressure on most family works and I have been especially lucky with mine. My sister-in-law, Sudeshna Misra, volunteered to give the thesis the most thorough edit for which I am grateful to her. The interest and alacrity shown by my son, Alope Sunder, during those three years of work has been amazing. He never complained of missing enjoying the vacations.

Susmita Misra

Chapter I

Introduction

Jute was the backbone of Bengal industries prior to the Independence of India in 1947 and it continued to be so for a couple of years thereafter. A number of studies have indeed been made on the historical perspective of this industry. But this dissertation has its own novelty what we have highlighted in Section I. Section I also gives a brief description of the industry's importance in the contemporary economy, and reviews the existing literature to identify the gaps in it. Section II provides the chapterisation of the study along with their brief descriptions. Section III highlights the research questions that are sought to be investigated in this dissertation. Section IV discusses the methodological issues.

I

The development of modern jute industry since the mid-nineteenth century rejuvenated the contemporary economy of Bengal from a moribund state. Traditional industries like cotton textiles, indigo, salt, shipbuilding etc. were all lost in market competition during the first half of the nineteenth century. Indigenous capital was, therefore, invested in agriculture largely bypassing the industrial projects. At that critical juncture of her industrial economy, the infusion of British capital in Bengal's jute industry created a new horizon of industrialization in this province. It should be noted that the development of this industry also promoted the interest of British capitalists. For about a century from its inception, the industrial revolution in Great Britain generated substantial capital without corresponding

expansion of her domestic market. As a result, the British capital could not find out vents for investment during the second half of the nineteenth century. By providing investment opportunities in Bengal, the jute industry largely sub-served the interest of British capitalists.

It should be noted that although the modern jute industry first developed at Dundee in the U.K, Bengal had accommodated jute processing in the cottage scale from a remote past. There is no detailed description about the industry in the existing industrial historiography. We seek to bring out the details of the cottage jute industry in Bengal. It is also a point of curiosity that how Bengal's modern jute industry could make out its position in the global packaging market, which was predominated by various packaging materials such as hemp, flax and tow. Also England had her own position in jute. It is, therefore, pertinent to investigate how Bengal jute could successfully penetrate into that highly competitive global packaging market during the second half of the nineteenth century. This study seeks to settle this question by a thorough study of comparative advantages between Dundee and Bengal in this line of production. We also seek to bring out the welfare implications of the industry by way of discussion on various aspects of its employment structure.

In this backdrop, it appears that Bengal's jute industry during 19th and early 20th century should be studied from the following viewpoints: i) the genesis and growth of the cottage jute industry in Bengal; ii) the development of the modern jute industry at Dundee, that subsequently led to the decline of Bengal's cottage jute industry; iii) the development of the

modern jute industry in Bengal, which subsequently reduced Dundee mills into insignificance; and iv) job opportunities in Bengal's modern jute industry. Let us now review the existing literature to see that to what extent these issues have been taken care of.

There are a number of studies on the antiquities of jute. The pioneer study in this field is 'The dictionary of the economic products of India' by Watt¹. This book also describes the preparation of soil and the cultivation of jute, the separation of fibre as also its bailing and spinning. A brief outline of the initial development of jute mills in Bengal is also available there.

For the cottage jute industry in Bengal, a report was prepared by Kerr at the behest of the British Parliament in 1872². In addition to its industrial aspect, the report also focuses on the production of this crop in each district of Bengal and its marketing network. The history of cottage jute industry in Dinajpur is, however, available in Martin's book on 'The history, antiquities, topography and statistics of Eastern India comprising the district of Dinajpur'³. Ahmed Martin Uddin also deals with the early history of this crop in his article 'The rise and fall of jute as a commercial crop'⁴. He discusses its marketing and production before the establishment of modern mills in Bengal.

A good account of the genesis of modern jute mills at Dundee is found in Dennis Chapman's article on 'The establishment the jute industry: A

¹ George Watt, The Dictionary of the Economic Products of India

² Hem Chunder Kerr, Report on the cultivation of and Trade in jute in Bengal and on Indian fibred

³ Montegomery Martin, The history, Antiquities, Topography and statistics of Eastern India comprising the districts of Dinajpur, Vol.-III

⁴ Ahmed Martin Uddin, The rise and fall of jute as a commercial crop 1850-1945

problem of location theory?⁵ He showed that how the French revolutionary war and the Napoleonic war escalated the price of flax and thrive for cheaper raw materials induced the use of jute as a substitute for hemp, flax and tow. The article 'International Competition and Strategic Response in the Dundee Jute Industry' by Masrani also touches upon the history of Bengal jute mills⁶. Although it focuses mainly on the effects of the global competition on Dundee jute industry during the inter-war and the post-war periods, the competition of Bengal mills prior to the World War I has also come up in his discussion. The Report of the Tariff Commission (1905)⁷, which is based on the evidences before the Commission and available literature in its field, also gives an account of the industry in various countries, including India. A number of studies are, however, available on the labour movement in Scotland. We may refer in this context the study of Gordon, especially in respect of women's participation in it during 1850-1914⁸.

The classical work on the history of Bengal jute industry is Wallace's 'The Romance of Jute'⁹, which elaborates various aspects of the industry right from its beginning in 1855. The topics of discussion include, *inter alia*, the industry's ownership pattern; employment opportunities, marketing, cartel formation, as well as the booms and slumps that the industry faced during 1855-1909. In a later edition (1928), however, the period of analysis

⁵ Dennis Chapman, The Establishment of the Jute Industry: A Problem of Location Theory?

⁶ Swapnesh k Masrani, International Competition and Strategic response in the Dundee jute industry during the inter war (1919-1939) and post war (1945-1960s)

⁷ Report of tariff commission, 1905, vol-2

⁸ Eleanor Gordon, Women, Work and Collective action: Dundee Jute Workers 1870-1906.

⁹ D.R. Wallace, The Romance of Jute

has been extended to 1927. Another contemporary work on jute is 'Economies of Jute' by Sengupta¹⁰, which deals with the commercial profitability of this fibre. We should also mention the book 'Location of Industries in India', by Sharma¹¹, which analyses how the Bengal jute mills got an advantage from its location.

A number of studies have been undertaken after the partition of Bengal in 1947. Those studies have sought to evaluate the impact of the partition on this industry which used to draw its raw materials earlier from the erstwhile East Bengal. We may mention in this context the studies like Sengupta's 'The Indian Jute Belt'¹², Chattopadhyaya's 'A Socio Economic Survey of Jute Labour'¹³ and Deb's 'A Comprehensive Study of jute'¹⁴. All these studies have been undertaken in the 1950s. There is also a contemporary report, viz. Report on the marketing of jute and jute products (1952) on the history of the handloom jute industry in Bengal and also her modern jute mills.

There is no serious study on the history of the jute industry during the following three decades. Scholars, however, have started studying it again from the early 1990s. Studies in this phase concentrate mainly on the issue of labour although there are variations across the dimension of the problem. We may cite in this connection the work of Sen on 'Women and Labour in Late Colonial India: The Bengal Jute Industry'¹⁵, that of

¹⁰ Sengupta, Economics of Jute

¹¹ Tulsi Ram Sharma: Location Of Industries In India (1946)

¹² P.Sengupta, The Indian Jute Belt

¹³ K.P.Chattopadhyay, A Socio economic survey of jute labour

¹⁴ Pijush Kanti deb, A Comprehensive Study of Jute.

¹⁵ Samita Sen, women and labour in Late Colonial India: The Bengal Jute Industry

Chakraborty on 'Rethinking Working-Class History: Bengal'¹⁶, that of Ghosh on 'Colonialism, Class and a History of the Calcutta Jute Mill-Hands: 1880-1930'¹⁷, and the edited works of Hann and Sen on 'A Case for Labour History: The Jute Industry in Eastern India'¹⁸. The last one, however, incorporates as many as eight articles. In her article Ghosh has analysed the labour productivity and income in jute industry. She has found that a lion's share of profit went to the owners prior to the Great Depression, leaving low returns to labour and raw materials. The composition of the working-force in the industry has been discussed, among others, by Hann and Sen. They have noted that the dominance of Bengali labour in the industry waned since the late 1870s, giving rise to migratory workers there. Hann has discussed in particular about the reasons behind the emerging pattern of migration, and also the labour market segmentation and the participation of female workers in the industry. He has also studied the history of eight families working at the Titagarh Jute Mill. Similar subjects have also been taken up by Sen with greater emphasis on the gender issues among the working class population. A detailed discussion on riots and strikes in jute mills is found in the articles of Chakraborty¹⁹, Basu and Ghosh²⁰. The central thesis of these articles is that economic issues apart, religious and community sentiments played an important role in the course of labour tension in the industry during the late nineteenth and early

¹⁶ Dipesh Chakraborty, Rethinking Working Class History Bengal 1890-1940

¹⁷ Parimal Ghosh, Colonialism, Class and a History of the Calcutta Jute Mill hands 1880-1930

¹⁸ Arjun De Hann and Samita Sen, A Case For Labour History: The Jute In Eastern India

¹⁹ Dipesh Chakraborty, Communal Riots and Labour: Bengal's Jute Mill-Hands in the 1890s

²⁰ Parimal Ghosh, Colonialism, Class and a History of the Calcutta Jute Mill hands 1880-1930

twentieth century. Basu²¹ has sought to analyse in particular the process of labour recruitment, the imposition of longer working hours, the nature of managerial control and the intervention of state in the affairs of labour relation. We may add here that various facets of migrant jute workers are also found in Hann's article on 'Unsettled Settlers: Migrant Workers and Industrial Capitalism in Calcutta' published in *Modern Asian Studies*²². Goswami has also studied the industry's labour problem in his article on 'Multiple Images: Jute Mill Strikes of 1929 and 1937 Seen through Other's Eyes'²³. In 1906, however, Foley undertook a detailed investigation in respect of migration and working conditions in jute industry in his report on 'Report on labour in Bengal, 1906'²⁴.

There are three recent works on the general aspects of the jute industry in Bengal. Those are Sarkar's 'Jute in India: An Economic Analysis'²⁵, Stewart's 'Jute and Empire: The Calcutta Jute Wallahs and Landscape of Empire'²⁶, and Sethia's 'The Rise of the Jute Manufacturing Industry in Colonial India'²⁷.

We thus find that there are the following gaps in the existing literature:

- i) There is very little deliberation on the cottage jute industry in Bengal. In particular, the literature fails to identify a) the status

²¹ Subho Basu, *Strikes and Communal Riots in the 1890s: Industrial Workers, Bhadrakol Nationalist and the Colonial State*

²² Arjun De Hann, *Unsettled Settlers: Migrant Workers and Industrial Capitalism in Calcutta*

²³ Omkar Goswami, *Multiple Images: Jute Mill Strikes of 1929 and 1937 Seen through Other's Eyes*

²⁴ B. Foley, *Report on labour in Bengal, 1906*

²⁵ Goutam Kumar Sarkar, *Jute in India: An Economic Analysis*

²⁶ Gordon T. Stewart, *Jute and Empire: The Calcutta Jute Wallahs and Landscape of Empire*

²⁷ Tara Sethia, *The Rise of the Jute Manufacturing Industry in Colonial India*

of its development, b) the period of the commencement of its decay;

- ii) There is no discussion in the literature about the competition between Bengal's cottage jute industry and the emerging mills at Dundee;
- iii) There is a lack of discussion on how the modern jute mills in Bengal won over the triangular competition that prevailed in the contemporary global market; and
- iv) There is also an inadequate deliberation on the welfare implications of the industry in the contemporary society of Bengal.

The present study seeks to fill up these gaps in the existing literature.

II

In addition to this introductory chapter, there are six chapters in the dissertation, as follows:

Chapter II: Cottage Jute in Bengal the genesis: A cottage organisation of production.

Chapter III: Jute Mills At Dundee: The Archrival of Bengal Mills.

Chapter IV: Jute Mills in Bengal: The Emerging Phase of 1855-1892.

Chapter V: Modern Jute Mills in Bengal: Drive to Maturity during 1890-1914.

Chapter VI: Employment Scenario and Industrial Relation.

Chapter VII: Summary of observations and conclusions.

We discuss in a nutshell the contents of each chapter below:

After a brief introduction about the antiquity of the jute, Chapter II discusses about the types of jute plants that were cultivated in Bengal. It analyses various aspects of jute cultivation in this province and its preliminary processing, using district-wise data and information. It also gives an idea about the availability of raw jute at the regional level, and throws light on the status of the cottage jute industry in Bengal during the nineteenth century. The discussion covers the dispersal of the industry across various districts, its marketing organisation and its sale in overseas markets.

Chapter III discusses the courses of dramatic changes that took place in the packaging world in the early nineteenth century, keeping Dundee and Bengal at the foci of discussion. It brings out the historical events relating to the use of jute as a substitute of other packaging materials like hemp, flax and tow, along with the course of technological development at Dundee mills. This chapter helps us to understand how Dundee jute industry dominated Bengal's cottage industry in the global market. It also analyses the comparative advantages that underlined the development of modern jute industry in Bengal during the second half of the nineteenth century, despite the long footings of Dundee mills.

Chapter IV discusses the growth of modern jute industry in Bengal amidst stern competitions. It reveals that the industry faced competition from the domestic handloom jute industry, which had long been dominating the markets in India and abroad. From the point of view of raw material

costs and labour, the handloom sector was no inferior to modern mills. Also, it had definite advantages over the latter because of its low overhead costs. The modern sector competed exclusively on the strength of technology and organization, which ensured better quality of products and timely delivery of bulk orders. Equally strong was, however, the competition from modern jute mills in other countries, especially from those at Dundee. Though Bengal mills enjoyed in this market a sharp competitive edge in respect of costs, the mills at Dundee had developed a strong grip over Bengal's raw jute market where many intermediary interests were involved. It took time for Bengal mills to gain command over the supply chain of raw materials. This chapter analyses how Bengal jute mills got over those competitions in several markets during the second half of the nineteenth century. In particular, this chapter examines the competitive struggle between the mills at Dundee and Bengal in the global markets and shows how the latter's won by the close of the 1880s in a triangular competition from the domestic traditional jute industry and Dundee's modern jute mills.

Chapter V seeks to analyse the latter phase of the industry's development from three viewpoints: a) the industry's growth in terms of the number of firms, their capacity creation in respect of looms and spindles, as well as the levels of investment and employment; b) the growth of its market, both in India and abroad, as also the changes in the product profile of the industry; and c) the role of different associations, particularly the Indian Jute Mills Association (IJMA), in the development of this industry.

Chapter VI delves into the employment opportunities of the industry. Since the creation of employment hinges on the state of technology in an industry, we briefly review the industry's technological aspect at the outset. We then proceed to analyse the growth of its employment generation highlighting the composition of employment, both in respect of gender and age. Wherever possible, a comparative study has been made between Bengal and Dundee mills in these respects. The qualitative aspect of employment is evaluated by taking into account the rates of wage, prevailed in the industry, and also the number of working hours.

Chapter VII sums up the major findings and conclusions.

III

The following research questions will be studied in this thesis:

1. What was the development status of the cottage jute industry in Bengal during the nineteenth century?
2. When and why did the industry collapse in Bengal?
3. In what circumstances did the modern jute mills emerge in various countries, especially at Dundee in the U.K and in Bengal?
4. How did Bengal jute mills won over the triangular competition that prevailed in the global packaging market? and
5. How did Bengal jute contribute to the labour welfare in the contemporary society?

IV

This study is primarily based on archival materials. While secondary data have been used to survey the existing knowledge and ideas relating to the industry, the archival sources are utilised to verify those knowledge and also to modify and extend them, where ever necessary. The documents that have been extensively used in this study are Administrative Report of Bengal (various issues), Moral and Material progress (various issues), Annual statements of the Sea-borne Trade and Navigation of Bengal Presidency with foreign countries and Indian ports (various issues), Annual Report on the working of the Indian Factories Act (various issues), Annual Report of the Indian Jute Mills Association (various issues), Statistical Abstracts Relating to British India (various issues), Census of India (various issues) and also various contemporary government reports such as Report on the Marketing of Jute and Jute Products, Report on Labour in Bengal, Royal Commission of Labour, Report of Tariff Commission, Report on the Cultivation of and Trade in Jute in Bengal. Cross verification of the data and information gathered from different sources has been made to ensure their reliability.

This study has gathered time series data on certain aspects of the industry. Those have been suitably processed and presented accordingly. In some cases, statistical tools like the Regression Analysis, the Testing of Hypothesis etc have been used.

CHAPTER II

Cottage Jute In Bengal The Genesis: A Cottage Organisation Of Production

Jute manufacturing was a cottage industry of Bengal functioning from the days of antiquity. It contributed to the growth of modern jute mills by way of ensuring a steady source of raw materials as well as a ready market at the global scale. This chapter seeks to deliberate on various aspects of this tradition industry. There are four sections in what follows.

Section I discusses about the types of jute plant with a brief introduction about the antiquity of the plant. Section II delves into various aspects of jute cultivation in Bengal and its preliminary processing. District-wise analysis is made in this section to get an idea about the availability of raw jute at the regional level. It also discusses the marketing organisation in section III. However, we seek to throw light on the status of the cottage industry in the nineteenth century Bengal. In particular, this section discusses about the dispersal of the industry across various districts, and also its sale of output in overseas market. Section IV, however, concludes.

I

Jute is familiar to the human race from the early days of civilisation. A mid-eighteenth century reference¹ quotes Pliny (79 A.D) recognising a kind of pot herbs used by the Egyptians to be the *melochia (or melokiyeh)*,

¹ Watt, The dictionary of the economic products, p.436

the native vocabulary of the edible part of jute in Arab. A fifteenth century evidence records about the hawking of this vegetable along the streets of Babylon, the ancient seat of medieval civilisation². The travelogue of Rouwolf (1583)³ tells us that the crop was regularly cultivated along the Euphrates for the consumption of the Jews at Aleppo. Five years later, Camerarius⁴ reported it for the first time in the scientific literature as a specie from Africa, generating curiosity among the botanical fraternity, and also an urge for further quest about it.

The history of jute, however, dates back to farther antiquity in the Indian context. About 300 BCE Koutilya's Arthasastra⁵ mentioned the uses of certain fibres for storage, which some later authorities claimed to have included jute. In particular, Kautilya noted, "He [the superintendent of yarns] should get yarn spun out of wool, bark-fibres, cotton, silk-cotton, hemp and flax, through widows, crippled women, maidens [etc.]"⁶, and a number of authors believe that the word hemp included, *inter alia*, jute. Indeed, Milburn pointed out that there were three varieties of hemp, viz. *sann*, *ghore-sann* and *Paut* [the local nomenclature of jute in Bengal]⁷, and that '[the *paut*] does not grow to the height of 4 feet ...[and] is not a profitable article to the landholder.' Watt confirmed, "The plant in question (the *paut*) was in all probability c.

² *ibid*

³ *ibid*

⁴ Camerarius, *Hortus Medicus et Philosophicus*, 1588, 47, f.12

⁵ Kangle, *The Kautilya Arthasastra*, p. 125.

⁶ *Ibid*, p.147.

⁷ Milburn, *Oriental Commerce* (1813), i., 283; ii., 209-11 as referred in Watt, p. 409

alitorius.⁸ Abul Fazl's *Ain-i-Akbery*⁹ also revealed that during the Mughal period of the emperor Akbar (1556-1605), the poorer section of the society dressed up themselves with sack cloths that were locally called '*tat*' in the Eastern and Northern segments of Bengal. Though there is no clarity in the document about the nature of those sack cloths, Jarrate¹⁰ identified those as jute goods that were manufactured at Rangpur, the jute heart-land of Bengal. Because of the similarity of their fibres, possibly jute was recognized as sun-hemp, hemp and flax, which were variously known locally as *san*, *bhanga*, *goni*, *pat*, *gania* etc. Similar confusion prevails in the contemporary literature as well. For example, Milburn reported the export of hemp from Bengal during 1786-1808, which included jute also.¹¹ In a log-book of a ship, however, Temple¹² discovered the word 'jote' as an article of export. This, indeed, signifies that even during the Mughal period jute used to be exported from India. A clear distinction between hemp and jute was, however, reported for the first time in 1793 when government statistics reported trade under the heading 'hemp other than jute'¹³. In the same year, Roxburgh of Sibpur Botanical Garden in Calcutta sent 100 tons of fibre to England for experimental purposes under the heading of jute.

⁸ Watt, *The dictionary of the economic products of India*, p.409

⁹ Uddin, *The rise and fall of jute*, p.15

¹⁰ Jarret, transl., ii., 123 as referred in watt, p. 410

¹¹ Three kinds of hemp that were reported were *sann*, *ghore-sann* and the *paut* (the local nomenclature of jute).

¹² *Ind. Antiq.*, 1901 as referred in Watt, p. 410

¹³ *Ibid*, p. 409

Jute is variously called as *pat*, *patta*, *jhot*, *jhut* and *khosta* in the contemporary province of Bengal.¹⁴ The word '*Khosta*' has possibly been derived from the Sanskrit word '*Khosa*', which means a sheath. From this nomenclature, it appears that the fibre belongs to the upper portion of the bark of the stem. The term *jhot* and *jhut* were used in the districts of Cuttack, Puri and Balasore of the present jurisdiction of Orissa, and also in Midnapore district of the present jurisdiction of West Bengal. Roxburgh¹⁵ first heard the name of '*jhot*' from a worker who hailed from Orissa. The term jute was possibly derived from this term '*jhot*'. The etymology of jute thus gives rise to a hypothesis that the home of this fibrous plant was the south-western part of the erstwhile Bengal province, which now belongs to Orissa.

Botanically jute is called *Corchorus* (*C.*) with two different species, *C. Capsularies* and *C. Olitorius*, having different characteristics¹⁶. There are many specimens of *C. Capsularies* in the herbaria of Calcutta and Kew, which have been collected from various places of India such as upper Assam, Bengal, Sikkim Terai, Moradabad, Saharanpur, Kanara and Mysore, as also from China, Japan, and Ceylon.¹⁷ Interestingly, no such specie is obtained from the continents of Africa and North America, or the gulf of Persia. Also, nowhere in the accompanying notes of those specimens is it stated that the plant was wild in India, Malaya, Japan, or in China. Those were rather reportedly collected from cultivated sources.

¹⁴ Ibid, p. 408

¹⁵ Kerr, Report of the cultivation of jute, p. 19

¹⁶ Ibid, p. 12

¹⁷ Watt, The dictionary of the economic products of India, p. 407

Roxburgh¹⁸, however, surmised that *C. Capsularies*, especially the red stemmed ones, grew wildly at Canton in China, which were subsequently brought to, and thus flourished in, Bengal. In support of his conjecture, he pointed out that the plant had flourished only in those belts of Bengal that had similar climatic features to the Chinese ones. Detailed documentary evidences about its cultivation, industrial processing and trade in China, though, are available only from the late nineteenth century. Thus, for example, Brechnider¹⁹ found extensive cultivation of *C. Capsularies* in China in 1898, and the journal of the Board of Trade²⁰ reported in 1903 an export of 10,000 cwt of jute from Tientsin (of China). It is worth mentioning that although no specimen from North America is found in any herbarium, Plukenet (1696)²¹ reported the existence of such a plant in that continent with long leaves that gave fruits.

An altogether different story is available for *C. Olitorius*. The herbarium sources reveal it to be mostly cultivated in gardens, and that, as we specifically learn from the specimen of Rottler, it was widely used in Bengal for paper making. Collections of the herbarium are found from India (such as Madras, Mysore, lower Bengal, Moradabad, and Simla), Afghanistan, and China (especially Yunnan), Ceylon, as well as from Africa and Egypt from where no specimen is found for *C. Capsularies* in herbaria. From the accompanying notes of a flora from British India it appears that India was the home of this plant that subsequently spread

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¹⁸ Roxburgh, Trans.Soc. Arts.,1806,xxiv.,146,151

¹⁹ Bretschneider, History of European Botanical Discoveries In China, 1898, l. c. 441

²⁰ Great Britain, Board of Trade Journal, October 29, 1903

²¹ Plukenet, Alm. Bot.,1696,ii., t. 255, f.4 as referred in Watt



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to various tropical countries for cultivation. In Bengal, especially in the districts of Burdwan, Khulna, 24 Parganas and Hoogly it grew wildly in various places, including the roadsides. On the difference between *C. Capsularies* and *C. Olitorius*, however, the accompanying notes of Calcutta and Kew herbaria suggest that while the former was used for the purpose of commerce, the latter was consumed directly, and also served medical purposes. In this context, confusion brewed around the mid-eighteenth century over the opinion of Rumphius²² that *C. Capsularies* was an edible specie in Bengal (locally called *sag*) that was indigenously known as *padhac*. His confusion probably cropped up for wrongfully identifying it with *Ganja Sativa*, which he clarified later on.

Both the species of *Corchorus* are now consumed as vegetable in Bengal. It has indeed two parts, edible and fibre. Its fibre is traditionally used to make cordages, ropes, sack cloths, bags (locally called *choti* or *goni*) and paper. Its edible part is called *nalita* or *melochia*. The vernacular name of *C. Olitorius* is variously called as *ban-pat*, *deshi pat* and *tosha*. The *ban-pat* is indicative of its wilderness while *deshi pat* (as also *tosha*) was surely an edible variety. Roxburg²³ indicated *C. Capsularies* as the *ghi nalta pat* and Dutt as the *narches*. A brief description of these two species of *Corchorus* (*C.*) in terms of their leaves, flowers and fruits are, however, shown in Table 1.1.

²²Ganja Sativa, Rumphius, Herbarium Amboinense, 1750, v., 212, t. 78, f. 1

²³Fl. Ind., ii., 581 as referred in Watt, p. 406

Table 2.1: Descriptions of *C. Capsularies* and *C. Olitorius*

Name of species	Leaves	Flowers	Fruits
<i>C. Capsularies</i>	Glabrous, not beaked	Small and sub-globose,	Warted
<i>C. Olitorius</i>	Glabrous, beak along	Larger, smooth	Smooth when matured but warted when immature

Source: Watt, The dictionary of the economic products of India, p.406

From a contemporary source Table 1.2 gives a concise description of three varieties of *C. Capsularies* that were found for industrial use in Bengal.

Table 2.2: Brief description of *C. Capsularies*

Name of the specie	Height of the plant (in feet)	Season of cultivation	Appropriate soils
Tarla	10 to 12	late in June	inundated area
Bombay	9	early July	Un-inundated area
Deswal	7	early July or late June	Un-inundated area

Source: Watt, The dictionary of the economic products of India, p.407

II

From the view point of fibre, there were qualitative variances of the plant across the districts of Bengal, and accordingly it got various names in commercial transactions. One of the finest fibres was the *uttariya* (a dialect of the term 'northern') that referred to the fibre from the plants that grew in the northern districts of Serajganj, namely, Rangpur, Goalpara, Bogra, Mymensing, Coach Behar and Jalpaiguri. Whatever was its length, colour and strength the market ranked it the best in quality. Also in hill areas it was cultivated for extensive uses among the *Hajung* and *Koch* tribes as dress-materials. In point of its fineness, strength,

softness as well as bright colour, the *deswal* (i.e. indigenous) coming from Serajgunge (near Dacca) and its neighbourhood the fibre was of a good quality. It was so called only when the plant was grown on *churs* (i.e. dry river-beds) but if planted on *beels* (i.e. marshy lands) it was called *bilan*. Among other good varieties of the fibre, mention should be made of the *desi* (again, indigenous) (grown in the districts of Hoogly, Burdwan, Jessore and 24 Parganas), the *karimgunji* (grown in Karimgunj in Mymensing), the *barkrabadi* (grown along the *churs* of the Megna in Dacca) and the *narraingunji* (grown in Aralia, Narraingunj and other places near Dacca). These fibres usually found outlets in the gunny trade, and were also spun for cloth-materials because of their softness, strength and length. We should also mention about the *jangipuri*, produced in Pubna, which was short and weak with a foxy colour but very suitable for the purpose of spinning. A number of inferior varieties were also grown in Bengal such as the *deoro* (grown in Faridpur and Backergunj), *bhaital* (coming from Narraingunj south of Bhati), and *mirajganji* (grown on the *churs* of the Teesta in Rangpur district). These inferior fibres were also often exported, mainly to Great Britain, but used primarily for the making of ropes and cordages, both for the home market and export. Table 2.3 shows the district-wise distribution of jute cultivation in Bengal in 1872. Since, as we will see shortly, the modern jute mill did not come up in a big way by this period, we may consider it representative of the pre-1850 scenario.

Table 2.3: District-wise Distribution of jute cultivation in Bengal

Present jurisdiction	District	Variety	Present jurisdiction	District	Variety
<i>West Bengal</i>	Dinajpur *	Both c.capsularies and c. olitorius	<i>Bangladesh</i>	Pubna	Both c.capsularies and c. olitorius
	Jalpaiguri	Both c.capsularies and c. olitorius		Backerganj	Both c.capsularies and c. olitorius
	Darjeeling	Both c.capsularies and c. olitorius		Rangpur	Both c.capsularies and c. olitorius
	Cooch Behar	Both c.capsularies and c. olitorius		Mymensing	Both c.capsularies and c. olitorius
	Malda	Both c.capsularies and c. olitorius		Bogra	Both c. capsularies and c. olitorius
	Murshidabad	Both c.capsularies and c. olitorius		Dacca	Both c. capsularies and c. olitorius
	24 Parganas	Both c.capsularies and c. olitorius		Farridpur	Both c.capsularies and c. olitorius
	Bankura	c. capsularies		Sylhet	c.capsularies
	Birbhum	Both c.capsularies and c. olitorius		Rajshahi	Both c.capsularies and c. olitorius
	Hoogly	Both c.capsularies and c. olitorius		Jessore	Both c.capsularies and c. olitorius
	Midnapur	Both c.capsularies and c. olitorius		Noakhally	Both c.capsularies and c. olitorius
	Sunderbans	Both c.capsularies and c. olitorius		Nowgong	Both c.capsularies and c. olitorius
	Burdwan	Both c.capsularies and c. olitorius		Chittagaon	c.capsularies
	Howrah	Both c.capsularies and c. olitorius		Cachar	Both c.capsularies and c. olitorius
	Nadia	Both c.capsularies and c. olitorius			

Source: Kerr, Report on the cultivation of jute, p. 22
 N.B: *Partly in Bangladesh.

The table shows that jute was cultivated in as many as 15 districts of the present jurisdiction of West Bengal, and 14 districts of that of Bangladesh. Most of these jutes were *c. capsularies* while *c. olitorius* was grown only along with it, and became an insignificant crop by 1872. The former was however, cultivated exclusively in four districts viz. Coach Behar, Bankura, Sylhet and Chittagong.

Jute was grown in various types of land, high land (called *sunā*), low land (called *sali*), dry river-beds (called *churs*), dry land, and even in the humid land of recently formed alluvium, although these variations caused qualitative differences. From the viewpoint of quality, the *sunā* land was best suited for *c. capsularies*, and the *sali* for *c. olitorius*. In terms of soil textures, however, loomy soils and clay soils, rich in sand, gave higher productivity while its productivity ran low in laterite and saline soils. The land type and soil texture, however, determined the sowing season of the plant in a region. It started from about February and continued through June. The earliest variety, the *bilan*, grown in the marshy land, was planted during February and available in the market during July-August. The late variety was the *utrāya* that was planted around June and harvested as late as in November.

For the sowing of jute, soils were first ploughed four to six times removing the weeds in the final plough.²⁴ About eight pounds of seed were then sowed per acre dividing the plot in lines with nine inches spaces in between. For fine and strong fibres, however, soils were

²⁴ Martin, The history and statistics of Eastern India, Vol.-III, p. 851

manured at the rate 150 maunds per acre. Plants were harvested when they were full of flowers with fruits stemming out. At the time of harvesting they stood five to six feet in height.

The separation of fibre from the green plant, however, involved several stages. In the first stage, stems were cut out from roots, and were left in fields for 3-4 days in bundles for the purpose of drying. In the second stage, the stalks were kept in clean water, mixed with a little amount of cow-dung, in a nearby pond for the purpose of cleansing. In the third stage, the bundles were hung on a frame of bamboos for 10-25 days long until the fibres were completely released. In the fourth stage, the tissue- particles were removed using clean water. Finally, they went through a drying process again for 2-3 days on the bamboo structure, and then were ready for sale in the market.

Raw jute mainly found three types of industrial usages in contemporary Bengal, viz. (a) rope and cordage making, (b) paper-making, and (c) manufacturing of gunny cloth and bags.²⁵ The last one was surely the most important article. For this article the fibre was spun in the handloom industry using the naive instruments like *takur* and *dhara*, which were manufactured by village artisans. *Takur*, made up of wood in a conical shape, was used for the purpose of spinning while *dhara* was a kind of reel, also made of wood. In spinning process, the artisan at first tied up a bundle of fibres at a post or at the roof of his hut, and reeled it on *dhara* separating threads from the lower parts of

²⁵ Indian Central Jute Committee, Report on jute , p. 2

bundle, and then twisting them in a clock wise direction. The twine, thus made, was then joined to a *takur* which was rotated against this thigh or his calf for the purpose of reeling²⁶.

The yield rate of jute varied across the districts, ranging from 2-3 maunds to 20 maunds per begah. Table 2.4 shows the district-wise area and production of jute in Bengal along with their respective levels of exports.

Table 2.4: District-wise area and annual production of jute in Bengal in 1872

Districts	Total agricultural area in acres	Area under jute (in acres)	Production of jute (in maunds)	Export (in maunds)
Pubna	876,640	122,880 (14.07)	1,873,200	NA
Dinagepore	1,650,400	117,629 (7.12)	1,764,435	NA
Rangpur	1,600,000	100,000 (6.25)	1,500,000	2,258,508
Mymensigh	1,344,000	84,000 (6.25)	1,260,000	1,850,000
Bogra	411,001	48,599 (1.39)	698,985	260,284
Dacca	1,685,414	40,000 (2.37)	600,000	1,160,411
Furreedpore	859,771	16,666 (1.93)	249,990	220,000
Goalparah	2,769,280	15,000 (0.54)	225,000	150,000
Rajsahi	1,280,000	14,333 (1.11)	214,995	130,000
Bakerganj	199,491	11,666 (5.84)	174,990	250,000
Jessore	2,024,960	6,385 (0.32)	95,775	160,000
Noakhally	599,417	3,636 (0.60)	54,540	6,817
Nowgong	820,480	1,457 (0.17)	21,855	NA
Chittagong	97,999	100 (0.10)	1,500	NA
Sylhet	666	9,990	9,000
Darjeeling	16,462	1,500 (9.11)	22,500	NA
Jalpaiguri	1,260,800	50,000 (3.97)	750,000	NA
CoachBehar	600,000	25,000 (4.16)	375,000	NA
Maldah	670,080	3,500 (0.52)	52,500	2,700
Murshidabad	1,106,782	3,666 (0.33)	54,990	NA
24 Parganas	2,919,680	47,162 (1.61)	707,450	105000*
Hooghly	640,000	32,000 (5.00)	160,000	NA
Midnapore	2,304,000	8,000 (0.35)	120,000	NA
Jessore, Sunderban of 24 Parganas, and Backerganj	505,739	6,220 (1.22)	93,300	NA
Burdwan	1,802,244	4,000 (0.22)	60,000	15,000**
Howrah	220,800	2,666 (1.20)	39,990	NA
Nuddea	-----	1,000	15,000	NA
Tripura	2,000,000	78,389 (3.91)	1,175,835	1,000,000

²⁶ Ibid, p.7

Purnea	2,400,000	75,000 (3.13)	1,125,000	200,000
Cuttack tributary Mehals	1,271,550	4,228 (0.33)	63,420	NA
Puree	-----	1,000	15,000	NA
Balasore	538,259	1,000 (0.18)	15,000	2,500
Kamroop	-----	310	4,650	NA
Durrung	1,682,560	186 (0.01)	2,790	NA
Cachar	1,530,360	55 (0.003)	825	NA
Total	37,735,100	925,899 (2.46%)	13,568,485	5,750,553[@]

Source: Kerr, Report on the cultivation of jute, p.65

N.B. * The figure is for Barasat and Alipur in the source. ** It is for Khulna in the source. @ It also includes the figure for Lohardugga. (---) Indicates a insignificant figure or even nil.

Table 2.4 shows that only 2.46 per cent of total agricultural area in Bengal was used in the cultivation of jute, signifying that till 1872 jute was not at all an important crop in Bengal for them. This is obviously taken to mean that modern jute mills were yet to come up in this province in a big way by the early 1870s. District-wise analysis of data, however, indicates that the largest proportion of land was devoted to this crop in Pubna, followed respectively by Dinajpur, Rangpur, Dacca, Backerganj and Mymensing. In the present jurisdiction of West Bengal, Darjeeling, Coach Behar and Jalpaiguri were ahead putting higher proportions of land under jute than the province-level average figure. In other districts, barring 24 Parganas and Hoogly, less than one per cent of the agricultural land was put under this crop.

In comparison to the present jurisdiction of West Bengal, the districts now belonging to Bangladesh performed better in respect of jute cultivation. Land under the cultivation of jute in those districts accounted for almost four percent of their cultivated area whereas it was

only 1.88 percent in West Bengal.²⁷ In respect of the yield of crop, they produced three times greater than what was produced in West Bengal. The yield per acre was also higher in the districts of Bangladesh. It was as high as 15 *maunds* per acre as against about 13 *maunds* in West Bengal. Qualitatively also, the Bangladesh fibres were much superior, which we have already pointed out. While confirming these observations Sharma noted, "As regards humidity and rainfall, we find that the cultivated area under jute and average outturn per acre are much higher in tracts of higher humidity and higher early and late rainfall.....Thus Dacca, Mymensing, Tripura and Faridpur, which all possess higher humidity and rainfall, are the best producers of jute in the Province."²⁸

The marketing of jute was based on a multi-tier network. A number of intermediaries were involved in between jute growers and its final users. Farmers dealing with jute had least access to the contemporary transportation system due to in their low level of income, on the one hand, and a high cost of transportation, on the other. They, therefore, always disposed of their crop at village markets, locally called *hat*. Buyers in these markets were predominately *Mahajans* who lent money to jute growers at the sowing season on condition of its repayment in kind after harvest. They also purchased jute from the *hat* to enhance their stock. They apart, *Paikars* were the other constituent buyers in these village markets. In many cases the wholesale traders used to employ their agents on commission basis to purchase raw jute from

²⁷ These calculations exclude the districts which were neither in the present jurisdiction of Bangladesh (i.e. erstwhile East Bengal) nor in West Bengal.

²⁸ Tulsi Ram Sharma: Location Of Industries In India (1946), p. 86.

those village markets. Those agents had expertise in the quality assessment, and purchased raw jute according to the need of their respective principal-whole-sellers. Obviously, they did not suffer from market risks.

These various buyers, who called *baperies* or *dealers* in the primary market, headers bought raw jute from ryots at the *hat* and sold them to the *mahajan* or *aratder* at marts, the secondary market. Big marts with extensive storage capacities were found mainly at Narraingunj (in Dacca), Serajganj, and Madaripur (in Backerganj) along the banks of the Bramhaputra and the Meghna respectively so that jute could be easily transhipped to Calcutta through the Ganges. Calcutta assumed importance in the map of jute trade because of its sea-port as well as the concentration of the user-industries in and around the city. Serajganj used to receive the crop from the districts like Rangpur, Goalpara, Bogra, Mymensing, Rajshahi, and Coach Behar. Products of Noakhally, Borisal, Mymensing, Tripura, Sylhet, and the banks of the Luckhea were sent to the mart of Narraingunj. The Deora jute that was cultivated in Farridpur and Backerganj was chiefly available at Madaripur. Besides these, Dinajpur, which was known as gunny bag manufacturing centre of North Bengal, sent its raw and finished goods to Debiganj, situated on the bank of the river Atrai. A large portion of the produce of Hoogly was sent to Gouripur and that of Purnea to Mirazpore in North-Western province.

Information is lacking on the internal trade of jute among the districts of Bengal. But there are evidence on the flow of raw jute from

the surplus districts to deficient ones. Thus, for example, the districts like Burdwan, Birbhum, and Chittagong imported raw jute from Serajganj whereas Murshidabad imported it from Dinajpur, Rangpur, Pubna, and Malda. Jute used to be exported outside the province as well. Champaran and Tirhoot imported it from Bengal proper for the packaging needs of their indigo factories, and also Patna for its saltpetre factories. Based on jute from Bengal, the cottage jute handicraft industry was also developed outside of Bengal proper as well.

Generally internal trade was carried out by boat or by cart²⁹. Cart was mainly used for the intra-district trade while boats and steamers were used for inter-district transportation. Transhipments to Calcutta were, indeed, confined to the mode of water transportation. Though it was the cheapest mode by all means, its cost varied according to distance and circumstances. We note in this context that certain districts sent their produce directly to Calcutta while others took resort to circuitous routes in the absence of direct link with the city. The following table presents the transportation cost of jute from various districts to the port city of Calcutta.

Table 2.5: District-wise Cost of Jute Transportation to Calcutta by Boat (Per maund)

District	Rs.	A.	P.
Rangpur	1	2	0
Mymensing	0	0	5 (average)
Serajganj	0	4	0
Purnea	0	0	8
Bogra	0	12	0
Rajsahi	0	0	17
Narraingunj	0	9	0

²⁹Indian Institute for Regional Development Studies, Spot light on jute, , p. 3

Furreedpore	0	0	23 (average)
Pubna	0	4-7	0
Bakerganj	0	5-5½	0
Mymensing	0	0	43
Malda	0	3-4	0

Source: Kerr, Report on the cultivation of jute, p.64

Transportation costs were certainly higher for those districts which could not send their crops directly to Calcutta. To acquaint to such freights we note that jute transportation to the mart of Serajganj by boat involved a cost of Annas 6 per maund from Coach Behar, and Annas 4½ per maund on average from Goalpara. Narraingunj in Dacca received jute at an average cost of Paise 4 per maund from Tripura, Paise 15 per maund from Balalganj in Sylhet, and Paise 7 per maund from Lukhan, also in Sylhet. Jute traders in Hoogly used to send their wares at first by cart to the bank of the Ganges for the final shipment to the principal destination, Calcutta, by boat. It involved a cost of 1 pie per maund per mile. Some times Mymensing sent its product either to Serajganj or to Narraingunj, but the cost of boat is not readily available.

If we consider only those districts which directly transhipped their products to Calcutta, we get the average transportation cost at Paise 42 per maund. An additional Paise 20 should be added to this on an average if the transportation involved a circuitous route.

There were three alternative arrangements of sale at the Bamunghata toll house which was situated at the outskirts of Calcutta. Firstly, jute could directly be sold from the boat at that place by paying a toll tax of one Anna per maund. Secondly, jute could be stored at the

arat, the commission agent's godown, at Bamunghata. The costs in that case were one Anna per maund to the Toll House, as before, and three pie per maund on account of the godown rent. Thirdly, the consignments might be sent to interior Calcutta by boat after the payment of the toll tax. In that case, the consignee was to send *Khalgastis*, the unloading porter, who were to be employed at Bamunghata. Transactions made in these cases were through brokers from the sides of both buyers and sellers. Sometimes the consignee gave advances to the consignor charging an interest at 12 per cent per annum. Residual payments for excess or short falls were settled within one month. In many cases, the consignor also paid advances to petty traders in jute growing districts. No interest was charged if the latter delivered their entire amount of procurement. Otherwise, a 12 per cent interest rate was charged.

Besides the commission of one Anna per maund, the following costs (in terms of both cash and in kind) were involved in the process of sale.

Table 2.6: Details of selling costs of raw jute in the intermediate markets:

Particulars	Expenditures		
	Rs.	A.	P.
In cash			
Weighing For 100 maunds	0	2	0
Coolies for removing from boats	0	6	0
Coolies for placing on scales	0	3	0
Collies for placing on scales carts to godown	0	1	3
Tally man	0	0	3
Brokerage to buyer's broker	0	0	3
Jachabder on each cart-laod	0	1	3
Total	0	15	12
In kind			
Jachander	2 seers per 100 maunds		
Brokerage	$\frac{1}{4}$ seers per drum		
Puja	$3\frac{3}{4}$ seers per 100 maunds		
Weigh man	$3\frac{3}{4}$ seers per 100 maunds		

Source: Kerr, Report on the cultivation of jute, p.68

Thus, a sum of 15 Annas 12 Paise per 100 maunds was involved as the intermediary cost of transaction. This was in addition to the cost of toll tax and transport cost.

III

A district-wise comparison of jute production and their import/export statistics, as available in table 2.4 gives us an idea about the dispersal of the industry across the districts. The table underscores that the quantity of export exceeded the domestic level of production in certain districts such as Rangpur, Mymensing, Dacca, Backerganj, and Jessore. These districts must have then imported the balance of export over production. On the basis of this surmise we infer that those districts imported jute by 758,508 *maunds*, 590,000 *maunds*, 560,411 *maunds*, 75,010 *maunds*, and 64,225 *maunds*, respectively. We take statistics to signify that jute manufacturing must have flourished in those districts. In the quest for the sources of these imports, however, we find that the districts like Bogra, Farridpur, Goalpara and Rajshahi used to export their surplus production over the domestic uses for direct consumption and industrial uses. This signifies that those districts should certainly be more fertile for jute but jute processing as an industry was not adequately developed there to absorb the domestically available raw materials.

From the reliable source it is, however, gathered that total export of jute in 1872-73 was 7,155,689 cwt (i.e. 9,758,213 maunds)³⁰ which accounted for 71.92 per cent of the aggregate production of 13,568,485 maunds³¹. The remaining 28.08 per cent must have been directly consumed, and/or industrially processed within those districts. In fact, this proportion held true for a number of districts such as Jalpaiguri and Dacca (vide Table 2.7). Table 2.7 reports district-wise industrial use of raw jute along with the product lines and their marketing.

Table 2.7: District-wise production and uses of jute in Bengal

Districts	Type of Fibres used in industry	Amount of industrial use	Product-mix	Marketing
Birbhum	Desi, Doolagunge	About 600	Gunny bags	Export
Mindnapore	Kosta, Naskarkani, Kangra jute	Cannot be estimated	Gunny, ropes, strong cord	Gunny bags chiefly export
Hoogly	Desi jute	1,20,00 maunds annually	Ropes, gunny cloth and gunny bags	Export
24 Parganas	Ditto	640 Maunds	Gunny and twine	Export
Burdwan	Both good, and inferior jute	350 maunds of good and 5.690 maunds of inferior jute	Gunny cloth and bags, twine and ropes	Local use and export to Calcutta
Jessore	Ditto	780 maunds	Gunny for bags and sails, twine and ropes	Local use and export to Backerganj
Rangpur	Ditto	50,187 maunds	Paper, gunny bags and tats	Export and locally use
Pubna	Baboon, Hemental, Shoynee, Mesta, and Desi	1,350 maunds	Gunny cloth and chats	Export and locally use
Dinajpur	Jute	233,514 maunds*	Gunny and twine	Export and locally use
Cooch Behar	C. Capsularies	Not known	Coarse and fine gunny cloth and mekhi cloth	
Darjeeling	Red, white and Merah, Emleah and	Hardly possible to give	Gunny cloth, fishing nets, and	Locally use and surplus sold at

³⁰ Kerr, Report on the cultivation of jute, p.71

³¹ Moral and material progress, 1873, vol. 44, p. 18

	Chera-mara		ropes	hats.
Jalpaiguri	Jute	One-fourth in to gunny bags	Gunny bags	One-fourth locally use and three fourth export
Dacca	Mesta, Coshta for paper, inferior jute for other purposes.	90,000 maunds	Rope,bags, paper,sails, twine and gunny sheets	One-fourth locally use and three-fourths export
Malda	Ditto	25,000 maunds	Gunny cloth, paper and thread.	Sold at hats and locally use.
Backerganj	Ditto	600 maunds	Gunny bags and paper	Locally use and export
Tripura	Ditto	2,125 maunds	Gunny bags	Locally use and export
Sylhet	Ditto	405 maunds	Gunny bags and gunny cloth, sheets	Locally use and export
Mymensing	Greater proportion of inferior jute.	12,000 maunds	Gunny bags and paper	Locally use
Furredpore	Desi, Bogi, Belun, Mesta	1,700 maunds	Gunny sail, twine, and cord	
Chittagaon	Jute	1,200 maunds	Rope and gunny	Locally use
Noakhally	Inferior jute but Mesta for paper	105 maunds	Gunny ropes and paper	Locally use
Bhalpore	Jute		Strings	Locally use
Cuttack	Ditto	500 maunds	Gunny bags, rope, paper	Locally used
Murshidabad	Ditto	38,000 maunds	Gunny bags, rope, sack cloth, packs for bullocks and nets	Locally use

Source: Kerr, Report on the cultivation of jute, p.82

- Estimated from Martin, pp. 580, 852.

Table 2.7 generates five major conclusions. First, the table points out that three-fourth production of jute in Bengal were exported outside the province while only one-fourths of it was used domestically. Secondly, the districts like Birbhum, Midnapur, Hoogly, and 24 Parganas entirely exported their manufactured goods to outside markets. Possibly their locations near the Calcutta Port enabled the industry to cater exclusively to the global market. Thirdly, these districts did not top in the

list of jute exporting zones, which Rangpur, Dacca, and Mymensing occupied. In fact, the spatial distributions of jute cultivation and its manufacturing activities suggest that the industry was not localised nearby the raw material zones.³² This is possibly explained by the fact that raw jute weighed almost the same as its output. The industry's localisation was rather determined by the proximity to the market, availability of skilled labour, and, indeed, an efficient transportation network. These factors explain why the handloom jute industry flourished in the districts of the present jurisdiction of Bangladesh, particularly, Dacca, Rangpur, Backerganj, Dinajpur and Bogra. Fourthly, jute was also cultivated extensively in Mymensing, Chittagaon, Noakhally, Bhalpore and Murshidabad, but its entire products were consumed locally. Fifthly, certain districts like Burdwan, Jessore, Rangpur, Pubna, Dinajpur, Darjeeling, Malda, Backerganj and Sylhet partly used up jute products locally, and partly exported them to outside markets. An additional inference from this table is that the handloom industry developed mainly in those districts where it got the support of domestic market. There might have been two types of domestic market; one, for packaging purposes, and two, for the manufacturing of cloths that were used in bedding, screens and garments. Jute garments were, however, made up of sack cloth, which was an inferior commodity consumed by the poorer section of the society. In fact, the developed status of sack-cloth manufacturing indicated the predominance of poorer

³² Dr. P. S. Loknathan holds a different view on this point. He writes: "The jute industry seems, however, to be an exception to the general theory of localization of the textile industries. Its raw material is cheap and it can not therefore afford much transportation cost." *Industrial Organization in India*, p. 64.

people in those districts. Cooch Behar and Murshidabad belonged to this category.

Bengal's handloom jute industry occupied monopoly in the global market before the spread of modern jute technology at Dundee from the late 1830s.³³ Table 1.6 reports the export trend of jute from Bengal before the 1840s.

Table 2.8: Annual export of jute product from Calcutta from 1828-1838

Year	Quantity (cwt)	Value (in Rs.)
1828-1829	15,392	27,712
1829-1830	7,840	12,436
1830-1831	11,162	23,498
1831-1832	34,171	70,701
1832-1833	35,500	67,682
1833-1834	78,260	143,509
1834-1835	32,824	55,771
1835-1836	17,747	36,345
1836-1837	233,246	441,592
1837-1838	124,303	181,066

Source: Select Committee, P.P, H.C, 1840, Vol-8, pp.1

Bengal thus exported more than 15,000 bags in 1828-29 that were valued at about Rs.28,000. It rose almost steadily in number to 78,260 in 1833-34 and further to 233,246 in 1836-37, and in value to Rs.143,509 and Rs.441,592 in respective years. The annual growth rate is thus worked out at 176.93 per cent and 186.69 per cent for the quantity and value series respectively during 1828/29-1836/37. These confirm that Bengal's handloom jute industry got a good entry in the world market prior to the emergence of the modern jute industry at Dundee. We report in Table 2.9 the major destinations of handloom jute

³³ Watt, the dictionary of the economic products of India, p.423

during 1828/29-1831/32. It shows that the United Kingdom was the major importer of Bengal jute goods during this period consuming about 90 per cent of them. Though America also imported it, the amount was insignificant.

Table 2.9: Export of handloom jute from Calcutta to Foreign countries

Year	Country	Quantity	Value (in Rs.)
1828-1829	United Kingdom	14,565	25,903
1828-1829	Coast of Malabar	827	1,809
1829-1830	United Kingdom	9,688	19,967
1829-1830	America	1,326	2,930
1830-1831	United Kingdom	30,867	62,202
1830-1831	America	1,981	5,833
1831-1832	United Kingdom	33,800	64,535

Source: Select Committee, P.P, H.C, 1840, Vol-8, p.1

By the early 1850s, however, Bengal's jute products could substantially diversify its market in the global context. It successfully penetrated into the markets like North America, and also a number of Asian countries. The following table is evidence to it:

Table 2.10: Export of gunny cloths and bags from Calcutta in 1850-51

Destinations	No. of bags and cloths	% of total export
United Kingdom	69,636	0.77
Hamburg	2,180	0.02
North America	2,290,427	25.34
Coast of Coromondal	1,955,150	21.63
Malaber	2,054,075	22.73
Penang and Singapore	1,043,600	11.54
Ceylon	357,290	3.95
New South Wales	32,125	0.35
Java	242,550	2.68
Pegu	672,950	7.44
Mauritius	213,980	2.36
Cape of Hope	82,750	0.91
Guam	15,000	0.16
Arabian and Persian Gulf	4,000	0.04
Total (in number)	9,035,713	
Value (in Rs.)	2,159,782	

Source: Wallace, Romance of Jute, p.1

North America became thus the largest importer of gunny bags from Bengal purchasing more than 25 per cent of her total export. In contrast, the United Kingdom was only an insignificant importer. Surely, the growth of Dundee jute industry in the previous decade explains the declining importance of Bengal jute products in Great Britain. The industry also got extensive supports from the domestic markets like Bombay and Madras where it respectively exported 22.73 percent and 21.63 percent of the total assignment in 1850-51. The other destinations of Bengal handloom jute exports included mainly Ceylon, Java, Pegu and Mauritius who procured more than one percent of the consignments from Bengal.

It is interesting to note that the scenario changed rapidly during the 1860s. A source informs that out of Bengal's aggregate jute export of Rs.7,716,910 in 1866, the United Kingdom imported Rs7,293,530 (i.e. 94.51 per cent) as against Rs.39,000 in America, Rs.15,970 in France and Rs.12,890 in Ceylon.³⁴ Definitely such a trend was due to the inclusion of raw jute in the series, where the newly set up mills at Dundee were the bulk consumer.

IV

We thus find that the cultivation of jute was concentrated mainly in the eastern half of the province, especially in the districts of Pubna, Dinajpur, Rangpur, Dacca, Backerganj, Mymensing. Both in respect of

³⁴ Statistical abstract, P.P, H.C. 1867-68, Vol.71, p. 1

area under jute and its yield rate, East Bengal was ahead of its Western counterpart. As a proportion of total land under plough, the jute acreage was 4 percent in former and 1.88 Percent in latter with their yield rates at 15 maunds and 13 maunds per acre respectively.

The district-wise production of jute fibres and its local uses reveals the following aspects of jute processing and its trade: a) three fourth production of jute in Bengal was exported outside the province while only one-fourths of it was used domestically; b) the districts like Birbhum, Midnapur, Hoogly, and 24 Parganas entirely exported their manufactured goods to outside markets. Possibly their locations near the Calcutta Port enabled the industry to cater exclusively to the global market; c) though jute was also cultivated extensively in Mymensing, Chittagong, Noakhally, Bhalpore and Murshidabad, their entire products were consumed locally, d) certain districts like Burdwan, Jessore, Rangpur, Pubna, Dinajpur, Darjeeling, Malda, Backerganj and Sylhet partly used up jute products locally, and partly exported them to outside markets, e) the spatial distributions of jute cultivation and its manufacturing activities suggest that the industry was not localised nearby the raw material zones, f) the handloom jute industry flourished in the districts of the present jurisdiction of Bangladesh, particularly, Dacca, Rangpur, Backerganj, Dinajpur and Bogra, g) the handloom industry became developed mainly in those districts where it got the support of domestic market.

Bengal hand loom jute industry occupied monopoly in the global market before the development of modern jute industry at Dundee. Even after the emergence of Dundee mills, it grew apace in the global trade. Though the main importer was the United Kingdom consuming 90 percent of total export, the industry later diversified its market to as many as 12 countries by 1850-1.

There was a three-tier marketing net work in the internal trade of jute. It was constituted of primary markets at the village level, secondary markets at the districts level and a province level market at Calcutta. While both bullock carts and boats were used at the district level transportation, large boats and steamers were employed for transshipment to Calcutta. The transportation cost in the internal trade has been worked out at Rs.0.42 per maund on an average in the direct routes with an additional cost of Rs. 0.20 for circuitous routes. This study has also revealed estimated cost of Rs. 1.02 per 100 maunds for intermediate transaction in the internal trade.

CHAPTER III

Jute Mills At Dundee:

The Archrival Of Bengal Mills

From the early nineteenth century, there were frequent changes in the global fibre-manufacturing scenario. While, on the one hand, newer fibres replaced the older ones from the basket of the industry's raw materials, newer countries invaded the market place, on the other, defeating the old. The present chapter seeks to detail out the courses of these dramatic changes in the packaging world with a definite emphasis on the emergence of India (particularly Bengal) in the global packaging market with jute as the major raw material. Section I of this chapter discusses the historical course of the use of new fibres at Dundee mills. The subject-matter of Section II is the downfall of the modern jute industry at Dundee. Section III analyses why the industry developed in Bengal during the second half of the nineteenth century despite the stronghold of Dundee mills. The discussion here is based on the comparative advantages of jute manufacturing between Calcutta and Dundee. Major findings of this chapter are contained in Section IV.

I

Dundee, a Scottish town in Great Britain, was an old centre of the packaging industry. By the end of the eighteenth century, it earned

reputation for producing coarse fabrics made of both flax and hemp¹. It never seriously ventured for linen manufacturing which concentrated at Belfast, Leeds and Inverness, using finer varieties of linens. Dundee's excellence in this market was further strengthened when it was discovered at the beginning of the nineteenth century that the use of whale oil softened hemp and other fibres so that their market accessibility was enhanced². After this discovery Dundee got special advantage because the supply chain of that oil was easily accessible from there. The basic raw materials like flax and hemp that were imported in the United Kingdom from Russia and the Baltic, were put into use in the mills that dotted over this region. Once manufactured, their end-products like flax yarn, hemp bagging and so on were despatched across the globe, particularly in the U.S.A, West Indies, Mexico and South Africa, in addition to the domestic market that had been expanding very fast in the wake of the British industrial revolution.

The Dundee linen industry entered into a difficult phase because of the French Revolutionary Wars (1793-1801) when the supply of raw material became very uncertain³. The difficulty was further perpetuated during the Napoleon wars (1804-1815) in view of the 'European blockade' by France. These events flared up the flax price, and hence a decline of its profitability, compelling Dundee merchants to begin searches for new fibres to substitute flax. Around that time, particularly from the late eighteenth century onwards, they had been

¹ Chapman, The establishment of the jute industry, p. 35

² Hartley, Research report on the jute industry, p. 3

³ Chapman, The establishment of the jute industry, p. 39

using tow, a waste product of flax that was short and broken, for manufacturing rope. But the fibre could not be conveniently processed on flax machines. Therefore, when the import of flax yarn was disturbed because of wars, for processing tow, Dundee mill-owners largely replaced the existing machinery by new ones that could accommodate slightly modified technology. Indeed, the new machine could process tow into finer fabrics in such a way that the profitability soared up remarkably. It is reported that Dundee tow mills earned higher profit by about 30 - 40 percent for some years⁴. The use of tow in the manufacturing process was definitely a landmark in the industry's history in Great Britain.

A crisis scenario also prevailed in the business of hemp bagging. As the Napoleonic wars progressed enabling France to successfully blockade the movement of manufactured goods from Great Britain and its colonies, the global hemp market began to suffer from unusual symptoms. While the price of hemp bags nosedived for the want of market, the price of raw hemp skyrocketed for the break in the supply chain. What emerged in the process was that the price of hemp bags ruled below that of the raw hemp! The industry's loss became thus inevitable. In view of such losses, a London-based manufacture, introduced sun-hemp for the first time in 1816 for manufacturing bags at Dundee⁵. Sun-hemp was the vernacular name of a kind of hemp that Dundee imported from India. This new fibre spread very quickly across Dundee mills because of its easy availability as well as higher implication

⁴ Ibid. p. 43

⁵ Ibid, p. 44

of profit. Moreover, sun-hemp bags could be offered for sale at about 16 percent less in price compared to the price of bags made of Russian hemp so that its competitiveness was never questioned⁶. This fibre dominated the global packaging market during 1816-26.

The global market also began to turn against this fibre also since 1826, and by the next quinquennium, a severe slump came to prevail over its trade. Profitability was dragged to the bottom, and so also the rate of wage, causing rampant industrial unrest across the industry. It was reported that in 1827, 350 hecklers organised a strong agitation at Dundee demanding higher wages; the management put them under lock-up for 13 days, and substituted their service by 150 unskilled workers on worn-out machines⁷. In this depressed phase of hemp bagging, the use of tow took its firm root and achieved a spectacular headway.

On the part of the East India Company, however, efforts had already been on the offing since 1791 to introduce jute in the British packaging industry. In that year, a Company's letter from Bengal informed, 'We are continuing our searches for new Article for Export to Great Britain....We sent a Number in the Packet, Samples of clean Hemp of this country, one of rough Hemp and one of *Jute* (we know no English name for this) the material of which Gunnies and the Ropes used in cording Bales is made'⁸ It appears that the term 'jute' thus entered in the English vocabulary for the first time. Two year's later, however. the

⁶ Ibid, p. 44

⁷ Warden, The linen trade, p. 612

⁸ Masrani, International Competition and Strategic, p. 110

Botanical Garden of Calcutta sent 100 tons of jute to England for experimental purposes⁹. Those efforts could not, however, yield any success. In 1822, further attempts were made to introduce jute in British packaging. This time two British merchants, Thomas Neish and one Rowan, imported jute from Bengal for sale to flax mills at Dundee but the mill-owners refused to use it, possibly because of their confusion that it was a kind of Indian fibre, particularly sunn hemp. Indeed, sun hemp was difficult to be spun under the contemporary technology and also its strength was lost when it was wet. Later, some Dundee manufacturers experimented with jute on their flax and hemp machine but until the year 1833, no significant success was achieved to smoothen its roughness.

A break-through took place in the contemporary experiments when a Dundee merchant, one Watt by name, discovered in 1833 that jute could be used in the place of hemp provided it was spun on tow machine¹⁰. It is learnt that Rowan obtained the first batch of manufactured jute yarn and cloth from Abington in England in 1833.¹¹ This sample evidently encouraged the local spinners and weavers to use jute as a substitute packaging material. However, since this innovation could not ensure perfection, Dundee mills did not go for pure jute materials. They rather began to adulterate tow with jute from 1834 onwards when the supply of Russian flax abated in the global market¹².

⁹ Sethia, *The Rise of the Jute Manufacturing Industry in Colonial India*, p. 74

¹⁰ Warden, *The linen trade*, p. 612

¹¹ Masrani, *International Competition and Strategic*, p.100

¹² Cited in Chapman, *The establishment of the jute industry*, p. 45

The packaging industry, however, disliked this practice, and it went a long way against the good-will and further potential of Bengal jute as a packaging material. Plenty examples are available in Dundee Advertiser, a local news paper's pointing out to 'jute and other rubbish in Dundee materials'¹³. Even the scope of its use as an adulterant was, however, lost when the power-loom began to rapidly replace the handloom technology in Great Britain since it could not be mechanically woven. Table 3.1 presents the data on how it entered into the Dundee market in the early 1830s.

Table 3.1: Imports of flax and jute at Dundee in the early 1830s

Year	Imports (in ton)		Price (in £ per ton)	
	Flax	Jute	Flax	Jute
1833	19,942	300	42-42.10	14.10
1834	17,326	828	54	12 - 14
1835	18,484	1,222	45 - 49	13 - 15
1836	39,274	16	47- 48	22- 23

Source: Chapman, Establishment of the Jute Industry, p. 46.

This table provides certain insights into the contemporary packaging market. Firstly, an upward trend is visible underlying Dundee's import of jute. From 300 tons in 1833, it escalated to 1,222 tons in 1835, exhibiting more than a 150 per cent rate of growth per annum. This was, indeed, a remarkable achievement on the part of Bengal jute since it captured this market entirely at the nascent stage. In contrast, a stationary state is seen to prevail over Dundee's import of flax. It was about 19,940 tons in 1833 sliding down to 17,326 tons and 18,484 tons in the following two years. Presumably, the lower price of

¹³ Watt, the dictionary of the economic products of India, p. 409

jute, compared to that of flax, might have been the driving force behind the upward trend of jute import in England. Whereas flax was priced in 1833 at about £ 42 per ton, jute was available only at £ 14.10 per ton in the same year. In the next year, the price of the former increased to £54 per ton but the later clearly reversed the course and became £13 a ton on average. Although the difference reduced subsequently, the former stood at about 127 per cent higher than the latter in 1836.

Import figures for 1836, however, generate a curiosity. Whereas the import of flax rose to 39,274 tons in that year, the trade of jute slumped to 16 tons. We may identify certain factors to explain this abrupt change. Firstly, the average price of jute was £14 per ton in 1835 but rose to £22.5 per ton in the next year. This represents a hike of more than 60 per cent in one year. A product's price increases either i) when its demand rises with its supply remaining same, ii) when its supply falls with its demand remaining same, or iii) when a rise in demand and a fall in supply take place simultaneously. Given the trend of British demand for jute in the early 1830s, a more plausible speculation is that its demand might have remained constant or marginally increased but a shortfall in supply should have led to the price rise. In other words, a supply-side bottleneck presumably caused the rise in price and the fall in import in 1836. Secondly, as against a 50 per cent rise in jute price the average price of flax increased from £44.5 per ton in 1835 to £47.5 per ton in 1836, that is an increase of 6.7 per cent. For this rise in the relative price of jute vis-à-vis its substitute good, the in-take of jute fell in

Dundee in 1836. Thirdly, huge imports of jute in 1835 (that was almost 50 per cent higher than that in 1834) might have remained largely unutilized and stocked at warehouses so that there was little necessity for its further import in the following year. Thus, the setback of British jute import in 1836 might be explained by the supply-side bottleneck and/or an overstock in the market in the previous year, both of which were short-run problems. For the long-run potentiality of Bengal jute, however, the real concern was that the prevailing technology was not compatible to process jute fibers.

The year 1836, however, marked the final milestone for the success of jute packaging because of an epoch-making innovation in the field of jute technology. It was that if raw jute was softened in a proper mixture of whale oil and water, it could be smoothly spun in tow machines and also woven on a power-driven machine. Once these became technically feasible, the cheapness of raw jute and its abundant supply from the colonial hinterland converted Dundee's flax mills into jute empires. Very promptly, indeed, these conversions took place from the late 1830s. The following table shows how quickly jute replace other fibres from Dundee's import basket of packaging materials.

Table 3.2: Imports of packaging fibres into Dundee

Year	Hemp and Hemp cedilla Quantity Share		Jute Quantity Share		Quantity of Total fibre import (in ton)
	(in ton)	(in %)	(in ton)	(in %)	
1830	3,691	18	Negligible	Negligible	20,696
1840	1,311	4.6	2,745	9.8	27,980
1850	1,104	1.9	14,080	25.2	55,718
1860	987	1.4	36,965	52.1	70,896

Source: Chapman, Establishment of the Jute Industry, p. 49

Table 3.2 illustrates that in 1830 Dundee imported hemp by 18 per cent of its total import of fibres, which stood at 20,696 tons. No record was, however, available for the importation of jute fibre in that year. However, in 1840, hemp import fell sharply to 1,311 tons, and that cut its market share of only 4.6 per cent. In the same year, Dundee manufacturers imported 2,745 tons of jute. It amounted to a share of 9.8 per cent in Dundee's total fibre trade. Indeed, this upward trend started in 1838 when an order was received from the Dutch government for the packaging of coffee beans in jute bags for their East Indian trade¹⁴. This event surely gave recognition to the use of jute in the packaging world. Also, the psychological fear of war that arose at the instance of the Afghan War (1838-42) played an important role behind the expansion of Dundee's jute industry from the late 1830s. Table 3.3 shows that Britain's import of raw jute from Calcutta increased from 11,972 cwt in 1828-33 to 63,055 cwt in 1834-9 on an average. It rose further to 109,728 cwt in 1839-44. It rose further to 216,649 cwt in 1844-49 (table 3.3). In value terms, Table 3.8 shows that the increase was from Rs. 28,929 in 1828-33 to Rs. 151,929 in 1834-9 and Rs. 222,691 in 1839-44 and further to Rs. 475,571 in 1844-49 on an average.

¹⁴ Warden, *The linen trade*, p. 612

Table 3.3: Five years average quantity of export of raw jute from Calcutta during 1828-1872. (in cwt)

Year	Great Britain	United States	France	Bombay*	Madras**	Cylon	Others	Total
1828/29-1832/33	11,972	575	-----	1,103	-----	-----	1	12,873
1834/35-1838/39	63,055	4,055	1,690	2,658	1,194	32	123	68,569
1839/40-1843/44	109,728	5,658	974	288	1,804	-----	229	117,046
1844/45-1848/49	216,649	1165	24,653	537	838	171	489	233,844
1849/50-1853/54	402,218	15,116	8,986	-----	817	-----	247	427,335
1854/55-1858/59	572,818	85,018	47,909	61	1,309	1,959	1,804	710,175
1859/60-1863/64	1,044,395	47,226	62,140	40,595	3,172	4,768	5,623	1,199,802
1864/65-1868/69	2,081,282	272,554	20,942	213,312	13,999	2,584	3,298	2,607,971
1869/70-1872/73#	3,916,368	797,383	42,785	110,429	16,829	2,709	12,838	4,899,332

N.B. *indicates Malabar coast, ** indicates Coromondal coast, (---) indicates a very insignificant amount or even nil. # Four years average.

Source: Estimated from the Kerr's report on the cultivation of jute, PP, lx-lxix

The introduction of a jute-spinning machine in 1848 and the beginning of direct railway communication between Dundee and London around that year boosted the use of jute as a packaging material, and hence the demand for raw jute from Bengal¹⁵. Dundee's average import of raw jute from Calcutta is seen to have rose from 402,218 cwt in 1849-54 to 572,818 cwt in 1854-59 in quantity (Table 3.3), and from Rs.1,221,979 to Rs. 2,080,591 in the respective years, in value (Table 3.8). Its demand reached at the peak during the Crimean war (1854-56)

¹⁵ Deninis Chapman, The establishment of the jute industry, p. 49

when the supplies of Russian flax and hemp were fully dislocated¹⁶. In those two years, Great Britain imported Bengal raw jute by 565,749 cwt and 765,639 cwt (valued at Rs. 1.84 million and Rs. 2.85 million), respectively (see annexure 3.1 for quantity and 3.2 for value). That war also boosted the demand for sandbags using jute as a substitute of flax.¹⁷ These circumstances explained why jute came to occupy more than 50 per cent market of Dundee's fibre import in 1860 (vide Table 3.2). In that year, Dundee manufacturers imported 36,965 tons of jute out of its total fibre import of 70,896 tons. Annexure 3.1 indicates that Dundee's industry grew steadily for a couple of years thereafter. From 923,668 cwt in 1860-61, its import of raw jute from Bengal increased to 2,392,780 cwt in 1863-64, 3,257,091 cwt in 1870-71, and 5,426,514 cwt in 1872-73 (see Annexure 3.1). In the respective years, the values of its import were Rs. 3.46 million, Rs. 14.49 million, Rs. 22.90 million, and Rs. 35.02 million (see Annexure 3.2). These figures indicate the industry's average average rate at 36.29 per cent per annum during the 1840s, 8.70 per cent per annum during the 1850s, 33.33 per cent per annum during the 1860s and 27.85 per cent per annum during 1869/70-1872/3. In the corresponding periods, its value series annually grew at 45.84 per cent, 21.63 per cent, 58.45 per cent and 31.67 per cent. The export of jute goods from U.K during 1875-1904, as shown in

¹⁶ The observation from the report of Board of trade, "Its prosperity dates from the time of the American civil war. The war had stopped the cotton supplies which America sent to Lancashire mills and the utility of jute, which could be cheaply produced, was recognised for many purposes for which cotton has hitherto been used. Dundee took advantage of the favourable opportunity and began its world trade" as cited by R. Chowdhury, *Evolution of Indian industries*, p. 140.

¹⁷ Martin, *The rise and fall of jute as a commercial crop*, p. 15

Table 3.4, establishes a rapid growth for Dundee's jute industry in the following period.

Table 3.4: Exports of jute manufactured from U.K

Year	Piece goods Quantity Value		Price (£ per yard)	Year	Piece goods Quantity Value		Price (£ per yard)
	(in million yards)	(in '000£) per million			(in million yards)	(in '000£) per million	
1875	101.2	1405	13.88	1890	273.8	2626	9.59
1876	12.8	1558	12.89	1891	283.7	2535	8.93
1877	116.8	1547	13.24	1892	266.2	2562	9.62
1878	123.0	1589	12.91	1893	265.0	2352	8.87
1879	164.1	1963	11.96	1894	233.4	2048	8.77
1880	183.2	2256	12.31	1894	254.7	2169	8.51
1881	204.3	2363	11.56	1896	257.1	2270	8.82
1882	212.5	2391	11.25	1897	233.8	2102	8.99
1883	227.3	2502	11.02	1898	211.1	1796	8.50
1884	242.8	2460	10.13	1809	213.3	1903	8.92
1885	215.1	1904	8.851	1900	174.0	1875	10.77
1886	216.1	1807	8.36	1901	215.5	2144	9.94
1887	244.2	2058	8.42	1902	195.8	1908	9.74
1888	231.5	2081	8.98	1903	211.0	2040	9.56
1889	265.1	2730	10.29	1904	197.0	1953	9.91

Source: Report of tariff commission, 1905, vol-2, p. 3765

The articles of jute that Dundee manufactured were used not only in the British domestic market, but catered also to many countries across the globe, especially in Europe and North America (vide Table 3.4). Dundee thus exported 101.2 million yards of jute piece goods in 1875, which earned a bill of £1.41 million. These suggest that by the beginning of the fourth quarter of the nineteenth century jute became an undisputed global packaging material, and also that Dundee got a large chunk of share in it. Since Dundee exclusively catered also to the British domestic market around that period, the extent of its contemporary jute industry is fairly comprehensible. What was more, the industry had still

been expanding. From 101.2 million yards in 1875 their export rose to 183.2 million yards in 1880, 242.8 million yards in 1884, and further to 283.7 million yards in 1891. In value terms, the rise in export was from £1.41 million to £2.26 million, £2.46 million and further to £2.54 million in corresponding years. On average, an annual growth rate of 12.02 per cent prevailed in the quantity series, and 5.30 per cent in the value series during 1875-91. Obviously, a falling trend in price must have explained this growth differential. We will shortly return to a discussion on this falling trend.

Of Dundee's export consignments, the lion's share went to the U.S. market. Table 3.11 displays that it absorbed more than a half of jute good exports from Dundee in most of the years during 1885-92. In 1891, its share touched a level of 56 per cent. The United States apart, Germany in Europe and Argentina in South America were important buyers of those articles. During 1885-93, the former imported about 7-10 per cent of it, and the latter 6-14 per cent. Other buyers included Holland, Belgium, France and Italy in Europe, Brazil in South America, as well as Australia and New Zealand in Oceania, but their in-takes were less than one per cent during 1885-92.

There is no denying the fact that a significant part of Dundee's jute market grew up as a substitute of other packaging materials like hemp, flax and tow. But surely it conquered the traditional market domain of Bengal handloom jute as well. To demonstrate how Dundee jute competed away Bengal handlooms from the latter's foreign market,

we present in Table 3.5 the export values of gunnies and gunny bags from Calcutta during 1852-66. Though the modern jute industry began to grow from 1855, we will see in the next chapter that its output is not included in this series. The absolute series of handloom jute exports from Calcutta is seen to have attained the peak of £392,424 in 1859, and then it fell gradually to £ 102,858 in 1865¹⁸. But both in the upswing and downswing of the series, rapid oscillations are predominant, causing certain degree of confusion about any firm conclusion. In view of this, the series is represented by 5-year moving averages.

Table 3.5: Value of exports of gunny bags and gunnies from Calcutta
(in £)

Year	Value	5 year moving average	Year	Value	5 year moving average
1852	287,411		1860	333,977	297,957
1853	231,159		1861	359,343	280,843
1854	174,790	242,207	1862	186,845	224,600
1855	215,335	259,975	1863	131,628	178,376
1856	302,338	257,182	1864	111,207	168,870
1857	376,252	300,709	1865	102,858	
1858	217,194	324,437	1866	311,813	
1859	392,424	335,838			

Source: Statistical abstract, p.p, H.C. 1867-68, Vol.71, p. 1

There is a steady trend in the series of moving averages. From £ 242,207 in 1854, the series climbed at the peak of £ 335,838 in 1859, and fell steadily thereafter through 1864 when the average figure was as low as £ 168,870. The rate of decline in the series was 9.94 per cent per

¹⁸ This observation goes against the opinion of Gadgil that the industry declined from 1830, Gadgil, Industrial evolution of India, p. 61

annum during 1859-64 as against an annual growth rate of 7.73 per cent during 1854-59.

The setback of Bengal's cottage jute products in various foreign market is understood from Table 3.6. Since the series starts here from 1863-64, it can not be ascertained when those markets began to shrink¹⁹. But it does indicate when those markets seriously collapsed. The table, however, shows that major export outlets for Bengal jute products, were the U.K., North America, Strait Settlements and Ceylon, which absorbed in 1866-67 about 91 per cent of Bengal's aggregate consignments.

¹⁹ (Table 3.5 establishes that Bengal's export market met setback from 1860 onwards).

Table 3.6: Export value of gunnies, cloth, twine and rope from Calcutta to foreign ports, 1863-1873 (in Rs.)

Year	U.K	North America	Aden	France	West Indies	Java	China	Australia and other ports	Cape of Good-Hope	Strait Settlement	Ceylon	Other countries	Grand total
1863-4	20,876	5,72,453	5,536	-----	9,990	33,950	22,722	60,785	21,895	271,175	72,718	17,399	1,309,499
1864-5	40,552	4,61,780 ²⁰	5,707	549	22,300	12,125	47,256	73,182	12,575	131,708	108,150	182,866	1,098,750
1865-6	241,779	21,06,758	11,156	34,525	9,600	89,265	2,230	107,589	18,744	179,374	129,844	63,839	2,994,703
1866-7	227,170	27,85,872	7,842	3,766	5,170	-----	30,335	220,146	23,540	197,822	107,415	3,819	3,585,897
1867-8	268,248	21,48,401	19,982	600	5,640	54,294	28,181	68,839	26,286	214,421	56,202	3,499	2,894,599
1868-9	1,875	6,90,589	13,460	-----	-----	31,205	83,646	177,321	26,948	596,735	130,127	1,835	1,751,906
1869-70	16,310	7,47,604	8,597	-----	-----	25,347	9,535	124,503	12,540	645,308	207,441	8,503	1,797,185
1870-1	1,474	27,99,716	6,789	-----	2,283	20,275	16,325	139,717	25,100	269,342	74,014	11,397	3,355,035
1871-2	55,517	10,68,689	8,599	12,525	-----	32,516	37,160	188,075	14,320	336,144	114,056	9,156	1,867,601
1872-3	8,072	5,44,836	13,330	-----	-----	9,000	54,868	380,567	50,288	547,226	175,125	88,137	1,783,312

Source: Kerr, Report on the cultivation of jute, Appendix L
 N.B: (---) indicates a very insignificant amount or even nil.

²⁰ It is included the export value of South America, Rs. 8187

In the United Kingdom, the market was curtailed drastically from Rs. 268,248 in 1867-68 to Rs. 1,875 in 1868-69, and in North America from Rs. 21,48,401 to Rs. 690,589 in the same period. Setbacks took place in other two countries in the following year. It fell from Rs. 645,308 in 1869-70 to Rs. 269,342 in 1870-71 in Strait Settlements, and from Rs. 207,441 in 1869-70 to Rs. 74,564 in 1870-71 in Ceylon. In certain markets, however, Bengal's export took an upward turn in later years. Our deliberations in the following chapter will show that those should be the consignments from Bengal's emerging modern jute mills.

Not only did Dundee oust Bengal jute products (especially handlooms) from the latter's external markets, but it became very competitive in Bengal's domestic market also. Table 3.7 presents the trends of Bengal's import of jute products during 1871-85. There are, indeed, rapid volatilities in the series, which are ironed out in 3-year moving averages, as shown in the table.

Table 3.7: Quantity of imports of bags in Bengal in (cwt)

Year	Quantity (cwt)	3-year moving average (cwt)	Year	Quantity(cwt)	3-year moving average (cwt)
1871	3,454,120		1879	4,759,363	4,546,880
1872	4,041,081	4,040,040	1880	4,638,896	4,775,688
1873	4,624,918	4,312,054	1881	4,928,805	5,168,514
1874	4,270,164	4,103,900	1882	5,937,842	6,083,892
1875	3,416,617	3,837,347	1883	7,385,028	6,134,741
1876	3,825,259	3,630,584	1884	5,081,353	6,063,285
1877	3,649,877	3,905,839	1885	5,723,4751	
1878	4,242,382	4,217,207			

Source: Statistical Abstract, P.P, H.C, 1886, Vol-68, p. 373.

The series of moving averages shows that Bengal imported jute bags weighing 4.04-4.31 million cwt during 1871-74. For three subsequent years, it fluctuated below the amount of 4 million cwt but surged upwards steadily thereafter. It became 4.55 million cwt in 1879, 5.17 million cwt in 1881 and 6.13 million cwt in 1883. The actual import figure was indeed 7.39 million cwt in 1883. The moving average series, however, shows that insofar as the losses of Bengal's foreign market during 1863-72 were concerned, those involved largely the markets of jute handlooms. But Dundee's intrusion in Bengal's domestic market during 1876-85 involved its competition with both handloom and powerloom products of Bengal since the latter had steadily been emerging in that period. This issue will be discussed at length in the following chapter.

II

Though Dundee's jute industry was dominant in the global market till around 1890, its monopoly began to be threatened from the second half of the 1850s onwards when the various countries had been gradually venturing into the industry. The pioneer in this field was the United States of America where jute goods were first manufactured in 1848 using jute yarns imported from Dundee²¹. Two years afterwards, the first spinning mill was set up there using raw jute directly imported from India. The next in this series was India where the first jute mill was established in 1855 to

²¹ Report of the marketing of the jute products, p. 12

initiate a long-standing growth of an industry that subsequently occupied a monopoly in the world jute market²². We detail its development process in the following chapter. This was followed by the opening up of the industry in France in 1857, in Germany in 1862, in Belgium in 1865 and in Austria in 1870²³. Certain facets of this development should be emphasized here. First, since major jute good importing countries entered into this development process, Dundee's interest was severely hampered. This was true for the countries like the United States of America and Germany which, as we have already pointed out, consumed substantial amount of Dundee products. There was substantial demand for jute bags in Carolina, Georgia and Virginia for the transshipment of cotton from the fields, especially after the Civil War (1861-65)²⁴. The US jute mills targeted this market, and also the market of carpet yarns and cordage. France was also a major importer of hessian and jute goods from Dundee till 1870²⁵. Dundee's interest suffered in that country also. This was also true for Belgium and Austria where the developed agricultural markets made substantial use of jute packaging materials from Dundee²⁶.

The growth of the jute industry in the USA and France is learnt from Table 3.3, which shows the export of raw jute from Bengal to different countries. Although the series appears to be fluctuating in the Annexure

²² Chattopadhyay, A socio economic survey of jute labour, p. 4

²³ Report of the marketing of the jute products, pp. 12-14

²⁴ Ibid, p 12

²⁵ Report of tariff commission, vol-2, p. 3656

²⁶ Report of the marketing of the jute products, p. 14

3.1, the five-yearly average series (Table 3.3) shows a steady upward rise. 47,226 cwt per year during 1859/60-1863/64, it increased to 272,554 cwt per year during 1864/65-1868/69, and further to 797,383 cwt per year during 1869/70-1872/73. The value series of jute import, as shown in Annexure 3.2 and averaged in Table 3.8 also demonstrates a steady progress for the US market. In the respective periods, it rose from Rs. 188,956, Rs.387,745, and Rs. 3,386,160. In the case of France, Table 3.3 shows that there was steady import of raw jute from Calcutta, although the trend of import was quite volatile there. In fact, France's jute industry began to grow steadily only a few years afterwards. We should note in this connection that Bengal raw jute was also transshipped to the provinces of Bombay and Madras, as well as Cylon, to some extent. On average, their imports were 46,123 cwt, 4,995 cwt and 2,036 cwt respectively during 1828/29-1872/73. Since modern jute mills did not come up in these places during this period, the imported raw jute must have been used in their own handloom jute products.

Table 3.8: Five years average value of raw jute export from Calcutta during 1828-1872 (in Rs.)

Year	Great Britain	United States	France	Bombay*	Madras**	Cylon	Others	Total
1828/29-1832/33	28,929	785	-----	-----	2,030	-----	7	22614.4
1834/35-1838/39	151,651	7,813	606	200	6,344	407	674	164,973
1839/40-1843/44	222,691	12,686	1,823	-----	1,349	3,857	742	239,342
1844/45-1848/49	475,571	2,713	49,433	492	1,968	2,689	1,961	512,255

1849/50-1853/54	1,221,979	44,266	29,256	-----	-----	2,195	797	1,298,334
1854/55-1858/59	2,080,591	305,239	192,597	7,495	250	4,124	8,812	2,596,584
1859/60-1863/64	4,539,987	188,956	246,865	18,463	218,059	19,180	27,700	5,215,598
1864/65-1868/69	10,544,810	387,745	101,586	12,839	1,125,850	71,175	15,133	12,259,138
1869/70-1872/73	25,529,988	3,386,160	258,410	17,572	650,707	82,716	126,973	30,052,527

N.B. *indicates Malabar coast, ** indicates Coromondal coast, (---) indicates a very insignificant amount or even nil.

Source: Estimated from Kerr's report on the cultivation of jute, PP, lx-lxix

The price series of Bengal's raw jute in the global market, derived from Tables Annexure 3.1 and 3.2 (see Annexure 3.3) and presented average series in Table 3.9 from it, also signify a spurt of modern jute mills in certain countries. The price of exported raw jute from Bengal is seen to have started rising from the second half of the 1830s. From Rs. 1.77 per cwt its average price rose to Rs. 2.28 per cwt during 1835-39, and fluctuated around it during the 1840s. Presumably, this spell of rise in the series was due to the emergence of jute mills at Dundee. The next spell started in the 1850s when the industry took its root in the USA. The table shows that the average price increased from Rs. 2.11 per cwt during 1845-49 to Rs. 3.38 per cwt during 1850-54, and further to Rs. 5.22 per cwt during 1860-64. The emergence of the industry in other countries since the early 1870s, especially France, further hiked the global price of Bengal raw jute to Rs. 6.43 per cwt. during 1870/71-1872/73. It is interesting to note that for the period 1828-72 as a whole, the average price of Bengal raw jute was higher in the provinces of Bombay and Madras, and also Cylon- namely above Rs.

4 per cwt- than what ruled in Great Britain, the USA and France. In the latter countries it is seen to be Rs. 3.39 per cwt, Rs. 3.25 per cwt and Rs. 3.93 per cwt respectively.

Table 3.9: Five years average price of raw jute export from Calcutta during 1828-1872 (in Rs.)

Year	Great Britain	United States	France	Bombay*	Madras**	Cylon	Others	Total
1828/29-1832/33	1.59	1.20	1.90	-----	-----	-----	8.75	1.61
1834/35-1838/39	2.43	2.61	2.35	3.58	4.30	2.21	5.29	2.43
1839/40-1843/44	1.98	2.14	3.28	2.08	-----	1.87	3.53	1.99
1844/45-1848/49	2.19	2.29	3.66	3.47	2.56	1.95	6.18	2.19
1849/50-1853/54	2.95	2.90	-----	3.02	-----	2.84	3.48	2.94
1854/55-1858/59	3.6	3.59	4.1	3.57	3.85	3.98	11.28	3.62
1859/60-1863/64	4.28	4.24	-----	4.52	4.91	3.91	4.45	6.24
1864/65-1868/69	5.01	4.05	4.88	5.36	5.05	4.81	5.14	4.77

N.B. *indicates Malabar coast, ** indicates Coromondal coast, (---) indicates a very insignificant amount or even nil.

Source: Calculated from Kerr, Report on the cultivation of jute, PP, lx-lxix.

Data relating to the price and quantity of sales give an insight into the growth performance of the industry till 1872-73. To draw inferences in this respect, we regress the price variable (P) in double-logarithmic scale on the quantity of export (Q) in aggregate and also for individual destinations (vide Table 3.9). From the view point of F-statistics the price-quantity relationship is found significant for the export destinations of Great Britain, France, Bombay and Cylon. While the significance level is 77 per cent for Cylon, it is more than 95 per cent for other three destinations. The relationship in aggregate has also been found highly significant, viz.

more than 99 per cent. Statistically insignificant relationship has been observed for export destination of the U.S.A and Madras.

Table 3.10: Estimated Price-Quantity Relationships and Their Relevant Statistics

No	Regression Equation	R ²	F (sig. level)
1	$\ln Q_{UK} = 9.581 + 2.751 \ln P_{UK}$ (S.E=0.445) (S.E=0.306) t=21.409 t=7.577 (0.0001) (0.0001)	0.572	57.411 (0.0001)
2	$\ln Q_{USA} = 8.894 + 0.907 \ln P_{USA}$ (S.E=0.580) (S.E=0.445) t=15.335 t=0.049 (0.0001) (0.049)	0.099	4.153 (0.49)
3	$\ln Q_{Bombay} = 3.619 + 3.920 \ln P_{Bombay}$ (S.E=1.533) (S.E=1.080) t=2.361 t=3.630 (0.027) (0.0001)	0.375	13.178 (0.0001)
4	$\ln Q_{Madras} = 5.778 + 1.240 \ln P_{Madras}$ (S.E=0.816) (S.E=0.593) t=7.081 t=2.090 (0.001) (0.044)	0.114	4.370 (0.440)
5	$\ln Q_{Cylon} = 4.898 + 1.409 \ln P_{Cylon}$ (S.E=1.742) (S.E=1.140) t=2.811 t=1.236 (0.010) (0.230)	0.065	1.527 (0.230)
6	$\ln Q_{France} = 6.557 + 2.144 \ln P_{France}$ (S.E=0.954) (S.E=0.702) t=6.876 t=3.005 (0.0001) (0.005)	0.237	9.331 (0.005)
7	$\ln Q_{Total} = 9.728 + 2.563 \ln P_{Total}$ (S.E=0.513) (S.E=0.409) t= 18.958 t=6.270 (0.0001) (0.0001)	0.478	39.316 (0.0001)

Our estimated relationships indicate a positive value for all slope parameters. Those imply that all estimated equations represent supply function. That is, the price variable in the export market is largely determined by the quantity of supply. The significance of these statistical findings is as follows: the contemporary jute industry had been growing at

such a rapid pace in the global context that the yearly supply of raw jute from Bengal lagged behind its demand so that the quantity of sale represented the amount of supply in the market. The other important inference is from the values of supply elasticity in these estimations. The supply elasticity of export is found to be greater than one in all the cases, excepting for the USA which is almost unit elastic. The elastic supply of export implies that as the price was increased its supply was increased more than proportionately. Possibly the higher export price was able to attract additional flows from the domestic market. Also, as the modern jute industry grew in other countries, the market of domestic handloom industry was squeezed, gradually leading to the decline of the industry. As a result, larger quantities of raw jute were made available for export.

It needs to be emphasised here that the industry's development in these various countries was patronised by their respective governments by way of providing tariff protections and bounties. Thus, for example, Germany imposed 11-12 per cent tariff in 1879 on yarn and 24 per cent on woven goods in addition to a five per cent subsidy in freight charges on the lines of steamer²⁷. Similarly, on the strength of tariff barriers the French jute manufacturers enjoyed 24 per cent margin and the Austrian manufacturers 29 per cent over Dundee manufacturers²⁸. By way of tariff cordons, these countries nourished their domestic jute interests.

²⁷ Report of tariff commission, p. 3660

²⁸ Ibid, p. 3656 and p. 3666

Because of these developments in various countries , Dundee's jute exports naturally suffered significantly. Table 3.4 shows that its export fell steadily from 283.7 million yards in 1891 to 197 million yards in 1904 in quantity and from £2.54 million to £ 1.95 million, in value during the same period. These series thus fell by 30.56 per cent and 23.23 per cent respectively during 1891-1904. It should be noted that although both the quantity and value series started declining from about 1892, the competitive pressure against Dundee had already started mounting from the mid-seventies, which was evident in the price series. Table 3.4 points out that from £13.88 per yard in 1875, their average price fell to £12.91 per yard in 1878, £11 per yard in 1883, £8.55 per yard in 1885 and £8.42 per yard in 1887. Dundee's supremacy thus began to erode from around 1875 although it became manifest only in the early 1890s.

Table 3.11: Exports of jute products from Dundee to different foreign countries

(in thousand £)

Year	Germany	Holland	Belgium	France	Italy	U.S.A	Brazil	Argentina	Australia	New Zealand	Canada	Others countries	Total
1885	174 (9.14)	32	56	61	67	842 (44.22%)	146	129 (6.77)	-----	-----	52	345	1904
1886	126 (6.97)	23	28	45	41	906 (50.13%)	118	148 (8.15)	-----	-----	57	315	1807
1887	173 (8.57)	24	31	44	31	951 (46.91%)	120	214 (10.56)	-----	-----	94	345	2027
1888	221 (10.6)	21	27	30	15	1063 (51.08%)	122	132 (6.34)	-----	-----	86	364	2081
1889	267 (9.78)	25	15	40	12	1334 (48.86%)	162	289 (10.59)	-----	-----	89	497	2730
1890	180 (6.85)	27	35	94	7	1337 (50.91%)	116	248 (9.44)	48	17	90	427	2626
1891	268 (10.5)	27	25	93	5	1419 (55.97%)	65	140 (5.52)	61	21	105	306	2535
1892	195 (7.61)	24	19	38	2	1295 (50.54%)	153	358 (13.97)	48	17	112	301	2562
1893	176 (7.48)	29	31	16	1	1097 (46.64%)	67	326 (13.86)	39	20	135	415	2352
1894	77	30	28	22	-----	860 (41.99%)	82	439	45	21	97	347	2048

1895	17	31	22	19	-----	997 (45.96%)	75	446	83	23	97	359	2169
1896	125	35	24	20	-----	1101 (48.50%)	34	404	92	29	150	256	2270
1897	17	35	27	19	-----	1253 (59.60%)	65	134	89	29	124	310	2102
1898	19	40	20	17	-----	841 (46.82%)	71	207	71	27	133	350	1796
1899	8	36	19	11	-----	890 (46.76%)	23	337	83	34	112	350	1903
1900	8	20	9	8	-----	888 (47.36%)	15	321	88	46	139	333	1875
1901	7	19	6	5	-----	1124 (52.42%)	31	326	78	51	158	339	2144
1902	6	28	8	5	-----	1075 (56.34%)	19	147	68	44	183	325	1908
1903	17	29	8	-----	-----	1003 (49.16%)	5	332	36	47	220	343	2040
1904	14	37	7	-----	-----	978 (50.07%)	5	207	55	43	201	406	1953

Source: Report of tariff commission, 1905, vol.2, p.3769.
N.B: (---) indicates a very insignificant amount or even nil

Dundee's setbacks in different markets are, however, demonstrated in Table 3.11. By 1885 the French market is seen to have already gone almost into oblivion since in that year it imported only £61,000 from Dundee, and accounted for less than one per cent share of its market during 1885-1904. The US market which had once been the strong-hold of Dundee shrank from £1.42 million in 1891 to £1.29 million in 1892, and then almost steadily to £0.89 million in 1900. Similarly, as against £268,000 in 1891, Germany took only £195,000 in 1892, £77,000 in 1894 and £8,000 in 1900. The market in Argentina fell belatedly, notably from 1896 on wards. Its market was £446,000 in 1895 but £404,000 in 1896 and £134,000 in 1897. The series fluctuated thereafter in a slightly higher range. The Australian market also squeezed belatedly. It fell from £92,000 in 1886 to £36,000 in 1903. The markets in Holland and Belgium had, however, begun to suffer from 1885 itself. From £32,000 in 1885 the former fell to £19,000 in 1901 and the latter from £56,000 to £6,000 in the same duration. We add in this context that Dundee's setback in different markets was not only due to the industry's developments in their respective domestic economies, but because of the fact that other countries also started to export their end products to those countries. This was especially true for Bengal mills, which we elaborate in a latter chapter. Also in this category was included Germany who imported raw jute from India through London on equal terms with Dundee, and definitely enjoyed price advantages because of her domestic tariff and bounty structure. It grabbed the markets of Turkey, Greece and Romania from Dundee. Similarly, Belgium largely took

over the markets of Australia and South America from the Scottish manufacturers²⁹.

III

We have adumbrated above that the development of jute industry in Bengal since 1855 was so robust that in the late nineteenth century it monopolised the global packaging market. While the industry's early stage of development will be discussed in the next chapter, this section seeks to explain on what scores did Bengal get predominance over Dundee during the second half of the nineteenth century. Surely an industry gets localised in the neighbourhood of its source of raw materials when its finished goods are lighter than the raw materials. But this logic was not true for the localisation of the jute manufacturing industry in Bengal since the raw jute does not reduce much in weight after processing. Therefore, some other factors must have been responsible for this industry's localisation.

To search for the explanation of localisation of jute industry in Bengal, we at first seek to compare the prices of raw jute between Bengal and Dundee in the mid-nineteenth century.

²⁹ Ibid, p. 3665

Table 3.12 : Time series of raw jute price in Bengal during 1828-72

Period	Price (Rs. per maund)
1828/29 -1832/33	1.96
1833/34 -1837/38	1.81
1838/39 - 1842/43	1.50
1843/44 -1847/48	1.62
1848/49 -1852/53	2.19
1853/54 -1857/58	2.69
1858/59 -1862/63	4.00
1863/64 -1867/68	3.38
1868/69 -1872/73	4.56

Source: Kundu *et al.* Jute in India, p. 316

Time series of average raw jute price at Calcutta, as presented in Table 3.12, shows a mild falling trend from Rs. 1.96 per maund during 1828-42; but, as jute manufacturing geared up at Dundee, its price soared up steadily. The table shows that the average price rose from Rs. 1.50 per maund during 1838-42 to Rs. 4.56 per maund during 1868-72. The price level was, however, much lower than this in the interior of the province; the handling and transshipment costs as well as profits at intermediate transactions must have bid up the price. Table 3.13 presents the district-wise price of raw jute in Bengal in 1872.

Table 3.13: District-wise price of raw jute in Bengal in 1872

District	Price (Rs. per maund)	District	Price (Rs. per maund)
Rungpore	1.75 - 2.75	Manbhoom	2.50
Pubna	1.25- 3.00	Singbhoom	2.25
Shylet	1.50-2.00	Bhagolpur	2.00
Mymensigh	1.50-2.00	Sonthal Pergunnahs	2.0-2.50
Faridpur	0.75-2.00	Barasat	2.0-2.50
Backergunj	0.50-1.12	Alipore	1.12-2.25
Dacca	1.00-2.00	Baripore	2.0-2.12
Burdwan	2.25-2.50	Nowgong	2.50-5.00
Hooghly	1.60-2.90	Goalparah	2.50-2.75
Howrah	2.50		

Source: Kerr, Report on the cultivation of jute, p. 36

Jute prices were relatively low in the districts of Faridpur, Mymensing and Sylhet, which now belong to Bangladesh. Its average price was as low as Rs.1.37 per maund in the first district, and Rs.2.12 per maund in the latter two. In three other districts of the present-day Bangladesh it ruled above Rs.2 per maund, notably at Rs.2.12 per maund in Rungpur and Pubna, and Rs.3.75 per maund in Nowgaon. In almost all the districts of present-day West Bengal, the price ruled at a higher bracket. It was Rs.2.50 per maund in Howrah, Rs.2.37 per maund in Burdwan, and Rs.2.25 per maund in Hoogly and Barasat (or 24 Parganas). It should be noted that while the quality of jute fibre was certainly a key factor for regional variations in the price level, it was not always the deciding factor. For, although the quality of fibre was superior in the districts of present-day Bangladesh, a number of such districts witnessed a lower price range. In fact, the demand for raw jute from local handlooms was an important factor to this end. Thus, inspite of substantial supply of raw jute in Pubna and Rungpur, where 14.07 per cent and 6.25 per cent of total area were cultivated respectively under jute, its price ruled at a higher level of Rs.2.12 per maund. In contrast, the price was as low as Rs.1.50 per maund on average in Dacca, although the supply of raw jute was limited there on account of only 2.73 per cent of total land under this crop. In the districts of Burdwan, Hoogly, Howrah and 24 Parganas, the price level was high, notably perhaps because of lower acreages under jute, viz 0.22 per cent, 5.00 per cent, 1.20 per cent and 1.60 per cent of their respective areas of land, as also for the burgeoning demand for fibre by the cottage industry. However, the prices in

Table 3.12 give an average of Rs.2.14 per maund as representing the price level of raw jute in the interior province in Bengal.

To derive the price of raw jute that a modern jute mill in the neighbourhood of Calcutta might be required to pay, we should add their transshipment and handling costs from the interiors of the province. We have estimated in the previous chapter that the average transportation cost from the interior province to Calcutta was 42 paises per maund in the direct route while an additional 20 paises were involved in the circuitous route on average. An average transportation cost of 52 paises per maund are taken up in this case. This apart, transactions in the internal trade involved the services of brokers, weighmen, porters, inspectors etc, but Table 2.10 has estimated such costs at about one paise per maund . Thus, the spot price of raw jute at Calcutta comes to Rs.2.67 per maund in 1872. Table 3.4, however, shows it at Rs.4.56 per maund during 1868-72. The difference, notably 1.89 per mound, should have been the profit margin at various stages of transaction in the interior trade. Since the previous one represents the prices at the hat, a 32 per cent profitability at the following two stages of transaction explains this price difference. In fact, a jute mill in Calcutta is expected to obtain raw jute at about Rs. 3.52 per maund as a source reports that many European buyers purchased raw jute at Bamunghata³⁰.

³⁰ Kerr, Report on the cultivation of jute, p. 67

The British Tariff Commission (1905), however, informs us that Great Britain imported 171,000 tons of raw jute in 1875, worth of £2,576,000, and 199,000 tons per annum on the average during 1875-79, worth of £2,961,000³¹. From these figures we estimate that the raw jute price in England was Rs. 5.58 per maund in 1875 and Rs. 5.51 per maund on average during 1875-79 (at £1 = Rs. 10 and 1 ton = 27 maund). If the Calcutta price is taken to be Rs. 3.52 per maund, the price difference of raw jute between Calcutta and Dundee comes to Rs. 2.06 per maund, or £ 5.56 per ton in 1875. Thus, a Dundee manufacturer was required to pay more than 50 per cent higher price for raw jute than what a Calcutta manufacturer paid. Even if we consider the Calcutta price at a higher side of Rs. 4.56 per maund, the difference comes to Rs. 1.02 a maund, i.e. slightly above £ 2.75 a ton, in 1875 so that the Dundee mills paid about 22.37 per cent higher price for imported raw jute from Bengal. This estimation appears to be a close approximation of the reality since the contemporary jute mills at Dundee frequently pointed out that due to the proximity to the raw material sources the Calcutta mills enjoyed a cost advantage of £3 per ton (i.e. Rs. 1.11 per maund) against Dundee mills.

Low cost of labour was another source of comparative advantages for Bengal jute mills. We have already discussed that for a long time in the past Bengal artisans were exposed to jute culture and its processing. The modern jute industry indeed came in and around the district of Hoogly near Calcutta,

³¹ Report of tariff commission, 1905, vol.2, p. 3721

which had experienced a robust development in the handloom jute industry. We have seen in the previous chapter that Hoogly had been the second largest concentration of jute handlooms in Bengal making industrial use of 120,000 maunds of raw jute. It was only after the district of Dinajpur where 233,514 maunds of raw jute were processed. Modern jute mills along the banks of the river Hoogly could readily obtain the supply of labour from the workforce who had earlier been engaged in the handloom jute industry. Also, a large number of workers flocked at factory gates from the surrounding districts like 24 Parganas, Burdwan, Birbhum and Murshidabad as the handloom jute industry had also been extinguishing there. In fact, the modern jute industry got the labour supply from within the province in its initial phase of development, especially till about 1885³².

Not only did the industry get a secured supply of skilled and unskilled workforce locally, their wage rate were also astonishingly low, generating the industry's comparative advantage at the global level. The cross-country wage rates in the contemporary jute industry were not directly comparable in view of their variations in working hours. Because of the stringent factory act, the length of working hours was lowest in the UK among the contemporary jute manufacturing countries. It was 55 hours per week in the UK as against 63 hours per week in Germany and France, 66 hours per week in Austria, and 69 hours per week in Belgium³³. Bengal jute mills, however, surpassed these all.

³² Foley, Report on labour, p. 14

³³ Ibid, p. 4019

Here the working hours were 90 hours per week. A Dundee jute interest thus pointed out that one of most important advantages of Calcutta mills was very notably the long and continuous working hours at the Calcutta factories, extending without stoppage of machinery from 5 a.m. till 8 p.m. for six days in each week, equal to 90 hours [per week], while the more extended application of this system admits of 132 working hours per week [certainly after the introduction of electricity in 1895], as against 55 hours in the United Kindom.³⁴ Indeed, such an extended working schedule could be enforced in the emerging jute mills on account of abundant labour supply that the downfall of handloom jute industry gave rise to. Had jute manufacturing not been a traditional livelihood in Bengal, the Calcutta mills found it difficult to obtain the workforce from the local populace since the division of labour was strictly based on a rigid caste system in Bengal's contemporary society. Given the developed status of the cottage jute industry during the first half of the nineteenth century, the caste-based division of labour in this province did not allow a large number of retrenched workers around the mid-1850s from the handloom sector to work in an altogether different job. As soon as the modern jute mills began to develop around Calcutta, they rendered their services to them. This explains why in the initial phase of the industry's development, the Calcutta mills enjoyed the buyers' control in the labour market, enabling the management to vastly extend the working hours. A contemporary source reveals, 'The working hours of Calcutta are 90 per week. It has been proved

³⁴ Ibid, p. 3927

that the real advantage to the producer is in having the larger output and longer working period. They justify it on the ground that they have great control of labour.³⁵ In fact, under certain circumstances, longer working hours gave rise to lower rate of wage, which we will shortly discuss. But it also ensured lower overhead costs, generating another source of comparative advantage. Victor Fraenkl, a Dundee jute exporter, thus calculates, 'That continuous running [of machinery 'day and night'] may mean a low 12 per cent advantage in cost of production, for Calcutta is manufacturing about 33 per cent cheaper than Dundee.'³⁶ Many interested in Dundee jute considered this as an unfair competition. Thus, according to Fraenkl again, 'India being our own country, we feel the manufacturing competition of Calcutta to be unfair.' And they felt such an unfair competition to have emerged out of the laxity in India's contemporary factory act, which should be amended in the interest of Dundee's jute industry. According to Longair, 'There is a reasonable expectation and strong probability, however, that this great disparity between the Factory Acts of India and Great Britain may be gradually lessened.'³⁷ But it continued and certainly gave a great stimulus to the development of modern jute industry in Bengal.

It should, however, be noted that in view of various witnesses in Foley's report (1905), it appears doubtful whether a system of 90 working hours a week (i.e. 15 hours in a day for six days in a week) prevailed in Bengal.

³⁵ Ibid, p. 3931

³⁶ Ibid, p. 3943

³⁷ Ibid, p. 3927

It is true that the working period at Calcutta mills spanned from 5 a.m. till 8 p.m. for six days in each week. But there were breaks in the work schedule when the workers used to take rest. In certain mills, there were resting places also. The report of Foley observes, 'His [worker's] hours were 5 A.M. to 8 P.M. with changes at 7.30 A.M., 10 A.M., 12.30 P.M., 3, and 5 P.M., each shift working 10 hours a day and not more than 5 hours at a time.'³⁸ It thus appears that the working hours were 10 per shift. But from the following observation in the report it follows that the workers worked for more than one shift, and for more than 12 hours: 'The reduction of the hours to 12 would not solve the labour difficulty, since the same number of shifts would be necessary. If Government insisted on a 10-hours' day, one shift could be used, the mill might be closed two hours in the middle of the day, and one-third of the labour would be thrown on the market: the out-turn would however be reduced by one-third.'³⁹

However, for the sake of comparison, we calculate wage rates of jute mills in different jute processing countries including Calcutta for the working hours of 55 per week. The wage rates of spinners were as follows.

Table 3.13: Contemporary wage rate for spinners in different countries

Country/Place	Rate per 55 hours		
	s	d	Rupees
France	8	5	4.25
Austria	7	0	3.50
Belgium	8	0	4.00
Dundee	9	0	4.50
Calcutta	-	-	1.21

Source: Report of tariff commission, 1905, vol.2, p 4019

³⁸ Foley, Report on labour, p. xxvi

³⁹ *ibid*

Among the European jute manufacturing countries Dundee thus provided the highest rate of wage to spinners. For 55 working hours in a week, it was Rs. 4.50 at Dundee in contrast to Rs. 3.50 in Austria, Rs. 4 in Belgium, and Rs. 4.25 in France. The variation in weekly wage rates was thus 28.57 per cent. The variation was greatly extended if the ruling wage rate at Calcutta mills is considered. A source reveals it at Rs. 2 Annas 10 for ordinary spinners and Rs. 3 Annas 7 for skilled spinners per week, giving an average of Rs. 3.02. Even if a shorter working hours of 60 per week (instead of 90 hours, as we have pointed out above) are considered, the weekly wage rate for spinners comes to Rs. 2.77 per week of 55 hours. At this estimation, the wage variation for spinners between Dundee and Calcutta mills is worked out at 53.43 per cent. The variation would be much greater than this if the working hours are taken to be 90 hours per week for Calcutta mills. It should be emphasized here that in the spinning branch lower cost of labour generated very significant comparative advantages since wages constituted two-thirds of the weekly expenses in this activity while the other one-thirds consisted of expenditures on coal, oil, furnishing, railway carriage, taxes etc., leaving raw material costs out of account. In respect of the weaving branch, however, a wider variation was noticed in the wage structures between Dundee and Calcutta. The British Tariff Board (1905) revealed that the weekly wage rate at Dundee was 23s. 3d. for a male weaver and 16s. for a female weaver⁴⁰. The average wage rate of a Dundee weaver thus comes to about 19.5s, or Rs. 9.75, per week. This was

⁴⁰ Report of tariff commission, 1905, vol.2, p. 3908

inclusive of factory overheads. Exclusive of factory overhead costs, the average wage rate of a Dundee weaver was reported at 15s. 6d⁴¹. per week, or about Rs. 7.50. In Foley's report, however, the wage rate at Calcutta was reported at Rs. 4 per week for an ordinary weaver and Rs. 6.50 per week for a skilled weaver⁴². The average wage rate for weavers at Calcutta mills was thus Rs. 5.25 per week. Even if we consider the working hours of 60 per week in Calcutta, it comes to Rs. 4.81 per week of 55 hours. The variation in the weavers' wage rate (exclusive of factory overheads) between Dundee and Calcutta thus appears to be about 56 per cent. Our estimation thus suggest that compared to Dundee mills the wage rate in Calcutta was cheaper at least by 53 per cent for spinners and 56 per cent for weavers.

Bengal jute products also enjoyed comparative advantages over Dundee articles in many markets because of lower transportation costs. Such advantages predominantly occurred in Far East countries (i.e. the countries lying farther east from India) such as Japan, China, Philippines, Malaysia, Indonesia etc. where jute products were extensively required for the conveyance of grain, flour, seeds, coffee, sugar etc. Freight charges for raw jute from Bengal to England is reported at 80s. a ton (or Rs. 1.48 per manund)⁴³. Taking raw material from Bengal and sending it back here after processing thus involved about Rs. 2.96 a maund (since raw jute does not significantly

⁴¹ *ibid*

⁴² Foley, Report on labour, p. 9

⁴³ William Longair, a Dundee jute spinner and manufacture, however, gave witness before the British Tariff Commission (1905) that the freight charge from Calcutta had earlier been 80s per ton (i.e. Rs. 1.48 per maund), which should have generated a higher cost differential. Report of tariff commission, 1905, vol. 2, p. 3927

reduce in weight after processing). At least by this sum of Rs. 2.96 a maund the freight cost of Bengal jute products should be less than that of Dundee goods in Far East markets. On the same logic, Bengal products waged formidable competition in India's domestic market. Even in the British market, Calcutta's mills could dominate in point of transportation costs because of a high freight rate between London and Dundee. It is learnt that Dundee mills could send jute goods at a cheaper rate to New York than to London. The conveyance cost was about 19s. a ton between Dundee and New York as against 26s. 6d. a ton (i.e. about Rs. 0.49 a maund) between Dundee and London⁴⁴. Hence, the cost price of Bengal jute products involved a freight of Rs. 1.48 per maund for one-way transportation cost at London whereas that of Dundee products bore one-way transshipment of raw jute upto London (viz. Rs. 1.48 a maund) and the to-and-fro freight rate between London and Dundee (viz. Rs. 0.98 a maund), aggregating to Rs. 2.46 per maund. On account of the conveyance cost the Calcutta mills had then surely an advantage over Dundee mills for the British market that was supplied from London. Also, the foreign and colonial markets that Dundee mills accessed through the port of London became more favourable to Calcutta mills owing to the high freight rate in the London-Dundee sector. Indeed, several witnesses before the British Tariff Commission (1905) lamented against this drawback. The Commission's report notes, 'Some firms state that the freight rates they have to pay are a greater drawback to their trade in yarns than foreign tariffs. This opinion is by no

⁴⁴ Report of tariff commission, p. 3911

means general, but there is practical unanimity as to the severe burden under existing conditions both of the railway and shipping rates on all branches of the industry⁴⁵.

Last, but not the least, the question of tariff in some jute manufacturing countries also gave better market environment to Calcutta mills, compared to their Dundee counterparts. Since most of the jute manufacturing countries imported raw materials from Bengal, they in many cases dared not to impose prohibitive tariff against Calcutta's manufactured jute lest Bengal also retaliated. But in no such countries the articles from Dundee were relieved. Thus, for instance, in 1892, there was an imposition of a duty at £4 15s. on foreign jute articles in France which imported jute goods earlier from Dundee since the early 1860s. According to a Dundee firm, 'We were sending a quarter of our products to France till the duty in 1892 made our trade dwindle away.'⁴⁶ But the jute goods sent from Calcutta to any port in France directly was admitted duty free. If, however, it was sent via England, 'it pays a surtax' even if it was not landed in England⁴⁷. Surely it was a boon to Calcutta mills in competition.

IV

We thus find that in view of import dislocations for flax and hemp, Dundee mills experimented with several alternative fibres and finally found solutions in

⁴⁵ Ibid, p. 3695

⁴⁶ Ibid, p. 3656

⁴⁷ Ibid

the use of jute. This study has shown on the basis of raw jute consumption and the sale of finished goods abroad that there was a rapid growth of the modern jute industry at Dundee from the early 1840s through the late 1880s. This rapid growth was explained by certain supply side factors like the easy availability of raw jute from Bengal at cheaper prices, and the development of railway network between Dundee and London, as also by a series of demand side factors like the Crimean war which accelerated the demand for sand bags. We have concluded that Dundee mills took away significant market share from Bengal's handloom jute industry in U.K, North America, Strait settlement and Ceylon. They also significantly penetrated into India's domestic market like Bombay and Madras including Bengal.

Dundee could not, however, retain its jute monopoly for long as the industry was subsequently developed in the U.S.A, Germany, Belgium and Austria. Those developments were, however, explained by the patronage in those countries. But the industry's development in Bengal was not nurtured under any state patronage. It was explained by the fact that Bengal enjoyed enormous comparative advantages in this time of production. We have found a) that in respect of raw jute prices Bengal had cost advantage of Rs. 1.89 per maund, b) that the labour cost was cheaper by 58 percent as compared to Dundee, c) that in respect of transportation cost Bengal enjoyed a cost advantage of Rs. 1.48 per maund in India's domestic market and also in the markets of the Far East. It had also cost advantages in those British domestic and foreign markets where Dundee supplied via London.

Anexture3.1: Quantity of Exported Jute in Calcutta during 1828-1872

(in cwt.)

Year	Great Britain	United States	France	Bombay*	Madras**	Cylon	Others	Total
1828-29	397	-----	-----	-----	-----	-----	-----	397
1829-30	1,834	101	-----	-----	-----	-----	1	1,936
1830-31	7,642	734	-----	-----	-----	-----	-----	8,375
1831-32	23,684	1,459	-----	876	-----	-----	-----	26,019
1832-33	26,306	6	-----	1,330	-----	-----	-----	27,642
1833-34	49,051	-----	-----	440	-----	-----	-----	49,491
1834-35	25,062	-----	-----	-----	-----	-----	-----	25,062
1835-36	10,576	1,579	-----	-----	232	15	24	12,426
1836-37	147,349	8,084	3,072	5,574	1,468	70	83	165,700
1837-38	83,235	2,503	309	1,960	1,883	12	264	90,166
1838-39	101,023	3,941	2,009	-----	531	-----	70	107,574
1839-40	78,824	-----	832	268	1,419	-----	362	81,705
1840-41	60,770	536	-----	26	2,398	-----	22	63,752
1841-42	105,400	9,508	81	-----	1,580	-----	536	117,105
1842-43	202,624	8,648	-----	572	3,093	-----	157	215,094
1843-44	211,829	201	-----	-----	2,290	-----	676	214,996
1844-45	256,437	2,180	-----	-----	220	-----	278	259,115
1845-46	199,403	2,058	9,708	537	578	275	848	213,407
1846-47	169,431	851	21,048	-----	263	67	157	191,817
1847-48	246,144	536	43,203	-----	0	-----	0	289,883
1848-49	328,948	7,231	37	-----	1,454	-----	82	337,752
1849-50	364,906	24,465	1,690	-----	648	-----	185	391,894
1850-51	564,967	6,790	10,234	-----	439	-----	428	582,858
1851-52	439,506	18,986	16,738	-----	117	-----	-----	475,347
1852-53	312,764	18,109	16,231	-----	1,428	-----	293	348,825

1853-54	369,944	96,729	39,815	-----	1,357	-----	790	508,635
1854-55	565,749	93,700	34,560	-----	3,221	1,077	4,065	702,372
1855-56	765,639	53,698	55,539	-----	-----	686	3,360	878,922
1856-57	492,543	112,170	64,610	61	381	2,254	139	672,158
1857-58	670,217	68,791	45,020	-----	276	3,817	666	788,787
1858-59	1,275,106	84,396	108,605	80	268	2,762	926	1472,143
1859-60	682,304	23,777	50,086	-----	525	4,004	290	760,986
1860-61	923,668	57,005	100,031	2,133	1,764	5,600	3,152	1,093,353
1861-62	1,120,994	49,790	38,351	72,520	5,445	7,324	15,902	1,310,326
1862-63	1,219,903	21,163	13,626	87,650	7,859	4,152	7,847	1,362,200
1863-64	2,392,780	53,266	56,395	139,212	6,891	1,071	10,496	2,660,111
1864-65	2,024,497	42,601	23,833	569,231	18,467	4,553	260	2,683,442
1865-66	2,226,055	1,011,145	4,286	92,840	37,059	3,281	1,319	3,375,985
1866-67	1,612,286	132,377	5,887	83,085	536	2,678	2,461	1,839,310
1867-68	2,150,790	123,382	14,308	182,193	7,040	1,339	1,954	2,481,006
1868-69	2,977,495	362,251	5,304	214,980	46,950	5,282	565	3,612,827
1869-70	2,956,401	338,228	49,225	76,673	11,527	3,683	3,737	3,439,474
1870-71	3,257,091	477,448	4,039	16,499	609	1,921	6,628	3,764,235
1871-72	4,964,337	1,342,374	6,889	85,918	3,163	959	30,890	6,434,530
1872-73	5,426,514	1,466,613	148,466	158,073	21,898	1,664	22,368	7,245,596
Average	935,387	139,305	22,090	39,838	4,339	1,301	2,279	2,717

N.B. *indicates Malabar coast, ** indicates Coromondal coast, (---) indicates a very insignificant amount(or even nil)

Source: Kerr, Report on the cultivation of jute, PP, lx-lxix

Anexture 3.2: Value of Exported Jute in Calcutta during 1828-1872

(in Rs.)

Year	Great Britain	U.S.A.	France.	Cylon.	Bombay .	Madras	Others.	Total.
1828-29	621	----	----	----	-----	-----	-----	621
1829-30	3,970	191	-----	-----	-----	-----	7	4,168
1830-31	20,109	2,111	-----	-----	-----	-----	-----	4,220
1831-32	56,323	54	-----	-----	1,917	-----	-----	38,294
1832-33	63,626	-----	-----	-----	2,143	-----	-----	65,769
1833-34	115,263	-----	-----	360	1,128	-----	-----	116,751
1834-35	53,915	11	-----	-----	-----	-----	35	53,961
1835-36	31,479	4,732	-----	47	-----	585	106	36,949
1836-37	387,081	20,794	-----	335	14,006	6,628	216	429,060
1837-38	170,519	5,716	606	60	3,899	5,003	2,339	188,142
1838-39	189,282	8,381	3,760	-----	-----	1,095	369	202,887
1839-40	147,530	-----	1,558	-----	501	2,657	678	152,924
1840-41	115,698	1,008	-----	-----	48	4,489	47	121,290
1841-42	227,682	20,851	152	-----	-----	3,459	1,835	253,979
1842-43	433,264	20,502	-----	-----	3,499	7,584	783	465,632
1843-44	535,412	512	-----	-----	-----	6,895	1,737	544,556
1844-45	569,625	4,823	-----	-----	-----	561	616	575,625
1845-46	423,366	5,399	17,362	848	1,968	2,044	2,890	453,877
1846-47	344,564	1,740	42,826	137	-----	1,257	2,599	393,123
1847-48	504,886	1,094	88,113	-----	-----	-----	-----	594,093
1848-49	671,838	14,766	77	-----	-----	2,970	437	690,088
1849-50	823,835	61,901	3,779	-----	-----	1,323	377	891,215
1850-51	1910,686	22,825	34,414	-----	-----	1,350	1,440	1,970,715
1851-52	1689,741	63,792	56,230	-----	-----	540	-----	1,810,303
1852-53	1013,795	58,044	51,780	-----	-----	4,794	935	1,129,348
1853-54	1178,138	304,516	126,565	-----	-----	4,066	2,504	1,615,789

1854-55	1845,884	304,318	122,801	3,417	-----	9,724	12,937	2,299,081
1855-56	2854,990	200,750	207,050	3,020	-----	-----	20,448	3,286,258
1856-57	2011,223	458,031	263,830	9,293	250	1,557	5,570	2,749,754
1857-58	2512,719	258,580	242,740	14,250	-----	1,150	2,600	3,032,039
1858-59	4515,880	309,081	405,460	10,311	300	1,000	3,458	5,245,490
1859-60	2605,437	88,711	186,990	14,950	-----	2,500	3,240	2,901,828
1860-61	3463,644	213,769	375,116	16,800	8,000	6,600	18,324	4,102,253
1861-62	4897,612	208,083	180,072	28,495	316,235	25,591	61,252	5,717,340
1862-63	7217,362	125,138	86,687	21,757	547,701	60,209	52,225	8,111,079
1863-64	14,488,364	292,806	234,584	6,429	862,998	47,765	47,329	15,980,275
1864-65	12,617,102	289,096	142,490	27,907	3,029,911	108,407	1,972	16,216,885
1865-66	7,293,524	389,998	15,970	12,250	240,601	154,790	5,281	8,112,414
1866-67	6,168,483	409,700	21,980	10,000	321,570	2,000	10,931	6,944,664
1867-68	12,156,579	557,125	92,906	7,609	1,174,171	42,911	10,150	14,041,451
1868-69	17,110,150	1,584,828	32,822	31,557	1,288,525	193,221	4,458	20,245,561
1869-70	17,835,168	1,555,616	325,921	24,032	465,338	75,170	25,539	20,306,784
1870-71	22,903,187	2,740,342	28,273	13,176	109,309	4,159	57,347	25,855,793
1871-72	35,016,615	5,533,823	52,858	7,292	532,258	24,947	346,385	41,514,178
1872-73	34,784,821	5,516,189	852,175	11,803	858,107	116,085	201,138	42,340,318

N.B. *indicates Malabar coast, ** indicates Coromondal coast, (---) indicates a very insignificant amount(or even nil)

Source: Kerr, Report on the cultivation of jute, pp. lx-lxix

Anexture3.3: price of raw jute export from Calcutta during 1828-1872
(in Rs.)

Year	Great Britain	U.S.A	Bombay	Madras	Cylon	France	Others	Average
1828-29	1.56	-----	-----	-----	-----	-----	-----	1.56
1829-30	2.16	1.89	-----	-----	-----	-----	8.75	2.15
1830-31	.28	2.88	-----	-----	-----	-----	-----	.50
1831-32	1.53	.04	2.19	-----	-----	-----	-----	1.47
1832-33	2.42	.00	1.61	-----	-----	-----	-----	2.38
1833-34	2.35	----	2.56	-----	-----	-----	-----	2.35
1834-35	2.15	-----	-----	-----	-----	-----	-----	2.15
1835-36	2.98	3.00	-----	-----	3.13	-----	4.42	2.97
1836-37	2.63	2.57	2.51	4.51	4.79	2.47	2.60	2.59
1837-38	2.05	2.28	1.99	2.66	5.00	1.96	8.86	2.09
1838-39	1.87	2.13	-----	2.06	-----	1.87	5.27	1.89
1839-40	1.87	-----	1.87	1.1.87	-----	1.87	1.87	1.87
1840-41	1.90	1.88	1.85	1.87	-----	-----	2.14	1.90
1841-42	2.16	2.19	-----	2.19	-----	1.88	3.42	2.17
1842-43	2.14	2.37	6.12	2.45	-----	-----	4.99	2.16
1843-44	2.53	2.55	-----	3.01	-----	-----	2.57	2.53
1844-45	2.22	2.21	-----	2.55	-----	-----	2.22	2.22
1845-46	2.12	2.62	3.66	3.54	3.08	1.79	3.41	2.13
1846-47	2.03	2.04	-----	4.78	2.04	2.03	16.55	2.05
1847-48	2.05	2.04	-----	-----	-----	2.04	-----	2.05
1848-49	2.04	2.04	-----	2.04	-----	2.08	5.33	2.04
1849-50	2.26	2.53	-----	2.04	-----	2.24	2.04	2.27
1850-51	3.38	3.36	-----	3.08	-----	3.36	3.36	3.38
1851-52	3.84	3.36	-----	4.62	-----	3.36	-----	3.81
1852-53	3.24	3.21	-----	3.36	-----	3.19	3.19	3.24
1853-54	3.18	3.15	-----	3.00	-----	3.18	3.17	3.18
1854-55	3.26	3.25	-----	3.02	3.17	3.55	3.18	3.27
1855-56	3.73	3.74	-----	-----	4.40	3.73	6.09	3.74
1856-57	4.08	4.08	4.10	4.09	4.12	4.08	40.07	4.09
1857-58	3.75	3.76	-----	4.17	3.73	5.39	3.90	3.84
1858-59	3.54	3.66	3.75	3.73	3.73	3.73	3.73	3.56

1859-60	3.82	3.73	-----	4.76	3.73	3.73	11.17	3.81
1860-61	3.75	3.75	3.75	3.74	3.00	3.75	5.81	3.75
1861-62	4.37	4.18	4.36	4.70	3.89	4.70	3.85	4.36
1862-63	5.92	5.91	6.25	7.66	5.24	6.36	6.66	5.95
1863-64	6.06	5.50	6.20	6.93	6.00	4.16	4.51	6.01
1864-65	6.23	6.79	5.32	5.87	6.13	5.98	7.58	6.04
1865-66	3.28	.39	2.59	4.18	3.73	3.73	4.00	2.40
1866-67	3.83	3.09	3.87	3.73	3.73	3.73	4.44	3.78
1867-68	5.65	4.52	6.44	6.10	5.68	6.49	5.19	5.66
1868-69	5.75	4.37	5.99	4.12	5.97	6.19	7.89	5.60
1869-70	6.03	4.60	6.07	6.52	6.53	6.62	6.83	5.90
1870-71	7.03	5.74	6.63	6.83	6.86	7.00	8.65	6.87
1871-72	7.05	4.12	6.19	7.89	7.60	7.67	11.21	6.45
1872-73	6.41	4.44	5.43	5.30	7.09	5.74	8.99	5.98
Average	3.39	3.25	4.22	4.04	4.68	3.93	5.16	

N.B. *indicates Malabar coast, ** indicates Coromondal coast, (---) indicates a very insignificant amount(or even nil)

Source: Calculated from Kerr, Report on the cultivation of jute

Chapter IV

Jute Mills in Bengal: The Emerging Phase of 1855-1892

Although Bengal jute mills enjoyed enormous comparative advantages at the global level, they encountered two-prong competition in their initial phase of development. That was why, as Section I of this chapter discusses, the industry's rate of growth in the initial phase was rather slow, though steady. The industry faced competition from the domestic handloom jute industry, which, as we saw in Chapter II, had long been dominating the markets in India and abroad. In points of raw material costs and labour, the handloom sector was no inferior to modern mills. Also, it had definite advantages over the latter because of its very low overhead costs. The modern sector competed only on the strength of technology and organization, which ensured better quality of products and timely delivery of bulk orders. Equally strong was also the competition from modern jute mills in other countries, especially from those at Dundee. Though Bengal mills enjoyed in this market a sharp competitive edge in respect of costs, the mills at Dundee had developed a strong grip over Bengal's raw jute market where many intermediary interests were involved. It took time for Bengal mills to gain command over the supply chain of raw materials. Section II, however, analyses how Bengal jute mills got over those competitions in several markets during the second half of the nineteenth century. Section III deals with the

competitive struggle between Dundee and Bengal in their respective domestic markets, while Section IV summarises the major findings.

I

Modern jute industry had a chequered beginning during the second half of the nineteenth century although it was punctuated by a host of adversities. While certain industry-level statistics help us to understand the features of this phase of development, the firm-level information is no less important in this regard. To start with, Table 4.1 presents basic statistics about the emergence of modern jute mills in Bengal during 1855-92.

Table 4.1: Pioneer jute mills in Bengal, 1855-92

Sl. no.	Name of the mill	Year of establishment	Owner/Promoter	No. of looms
1	Acland Mill	1855	George Acland	100
2	Borneo Jute Company	1859	Henderson and CO.	520
3	Gouripur Mill	1862	J. B. and T. Barry	160
4	Serajunge Mill	1864	Hoare, Miller and Co.	310*
5	Alipore Jail Factory	1870	Calcutta Central Jail	130
6	Fort Gloster Jute Mill	1872	Richard Macallister	258**
7	Champdany Jute Mill	1873	Finlay, Muir and co.	358**
8	Budge-Budge Jute Mill	1874	Andrew Yule and Co.	150
9	Shibpur Jute Mill	1874	Apear and Co.	250
10	Samnugger Jute Mill	1874	Schoene, Kilburn and Co.	313
11	Howrah Jute Mill	1874	Ernsthausen and Oesterley	275
12	Oriental Jute Mill	1874	Richard Macallister	350@
13	Asiatic Jute Mill	1874	Cohen Bros. and Co.	70
14	Bengal Press and Manufactures	1874	Schoene, Kilburn and Co.	72
15	Clive Jute Mill	1874	Gladstore, Wyllie and Co.	140

16	Rustomjee Jute Mill	1875	Richard Macallister	125
17	The Ganges Jute Mill	1875	MacNeill and Co	300
18	Hastings Jute Mill	1875	Birkmyre Bros.	230
19	Kamarhatty Jute Mill	1879	James Jardine, Skinner and Co.	202
20	Titaghar Jute Mill	1882	Thomas Duff and Co. (Agent)	260
21	Kankinara Jute Mill	1882	James Jardine, Skinner and Co.	320
22	Victoria Jute Mill	1882	James Luke, Junr.	168
23	Hooghly Jute Mill	1882	Gillanders, Arbuthnot and Co.	300
24	Chandernagore Jute Mill	1892	Gillanders, Arbuthnot and Co	NA

Source: Wallace, Romance of Jute, p. 56-57 and Carter, Jute and its manufacture, pp. 167-70.

N.B. *For a later period, ** For 1878-79, @ For 1889

It may be noted that outside Bengal only two jute mills were set up during this period, and that too, at a very modest scale. Those were Chittavalsah Mill at Madras and Cawnpore Jute Mill at Cawnpore, with looms less than 100 in number¹.

The growth pattern of the industry, as reflected in the above table and summarised in Table 4.2, shows that the industry began to grow at a modest pace since 1855. In each of the first two quinquennia, two firms were established, followed by the setting up of only one firm in the third. The rate of growth suddenly picked up during 1871-75 when as many as 13 firms came up. There was a lull thereafter with only one firm having come up during 1876-80², four firms during 1881-85, nil during 1886-90 and again one during 1891-95.

¹ Carter, Jute and its manufacture, p. 167

² In fact, a state of depression prevailed in the industry during 1875-1882. See, Chowdhury, Evolution of Indian industries, p.141

Table 4.2: Pattern of initial growth in the modern jute industry of Bengal

Period	Number of firms	Cumulative frequency	Number of looms	Estimated investment (in Rs.)
1855-60	2	2	620	2,170,000
1861-65	2	4	470	1,645,000
1866-70	1	5	130	455,000
1871-75	13	18	2851	10,118,000
1876-80	1	19	202	707,000
1881-85	4	23	1048	3,668,000
1886-90	0	23	0	0
1891-95	1	24	NA	NA

Source: Calculated from Table 4.1.

The level of investment is estimated in Table 4.2 on the basis of a norm of Rs. 3,500 per loom which included the construction costs of mill buildings, warehouses, manager's house and overseer's barracks, as well as the cost of looms with all accessories including spinning and engine power. This estimation shows that during 1855-85 a sum of Rs. 18.74 million was invested in this industry. The estimation has certainly downward bias since the expansion and diversification of the existing mills during this period have not been accounted for. Because of such a huge investment, however, the industry must have received tremendous impetus of growth in the initial phase.

One of the major factors underlying such a massive flow of investment in the industry was the managing agency system that Bengal innovated during the nineteenth century. Majority of the contemporary jute mills were associated with such an organisational structure from the beginning. Table 4.3 presents the network of managing agents operating in the contemporary jute mills in Bengal.

Table 4.3: Network of managing agents in Bengal jute mills during 1855-92

Sl. No.	Managing agent	Jute mill
1	A.R. McIntosh and Co.	i. Managed Calcutta (erstwhile Acland) Jute Mill during 1877-80.
2	Finlay, Muir and Co.	i. Floated Champdany Jute Mill in 1873 and managed since then. ii. Managed Calcutta (erstwhile Acland) Jute Mill since 1881.
3	Jardine, Skinner and Co.	i. Floated Kamarhatty Jute Mill in 1878 and Kankinara Jute Mill in 1873 and managed since then. ii. Managed Gouripur Jute Mill between 1862-77.
4	Barry and Co.	i. Managed Gouripur Jute Mill since 1877.
5	George Henderson and Co.	i. Floated Borneo Jute Mill in 1857 and managed since then.
6	McKinnon, McKenzie and Co.	i. Floated India Jute Mill in 1868 and managed since then.
7	Gillanders, Arbuthnot and Co.	i. Floated Chandernagore Jute Mill in 1892 and Hooghly Jute Mill in 1873 and managed since then. ii. Managed Belliaghatta Jute Mill (erstwhile Bengal jute Press and Manufactures) during 1877-81
8	Hoare, Miller and Co.	i. Floated Serajgunj Jute Mill in 1864 and managed since then.
9	Bird and Co.	i. Managed Union Jute Mill since 1879
10	Schoene, Kilburn and Co.	i. Floated Samnuger Jute Mill in 1874, and managed till 1884. ii. Managed Bengal jute Press and Manufactures during 1874-77.
11	Andrew Yule and Co.	i. Floated Budge-Budge Jute Mill in 1874, and managed till 1884. ii. Managed Central Jute Mill since 1890.
12	Gladstone, Wyllie and Co.	i. Floated Clive Jute Mill in 1874 and managed since then.
13	Thomas Duff and Co.	i. Floated Titaghar Jute Mill in 1882 and managed till 1884. ii. Managed Samnuger Jute Mill since 1884 and Victoria Jute Mill since.
14	McNeill and Co.	i. Floated Ganges Jute Mill in 1875 and managed since then.

Source: Carter, Jute and its manufacture, pp. 167-170

The managing agents usually floated joint stock companies providing promoter's contribution to the paid-up capital, and assumed the task of management against an agency charge. Many a times, instead of floating a company afresh they acquired existing ones, and pumped fresh investment therein for the sake of agency business. On the strength of their good-will among the public, they could mobilise substantial sums from the market. Their involvement in the industry explained why Bengal's jute mills obtained the majority of investment from India's domestic market. In certain cases, the managing agents had their roots in the United Kingdom enjoying accessibility to the global capital market.

Thus, the agents like the Finlay, Muir and Co., the George Henderson and Co., the McKinnon, McKenzie and Co., the Schoene, Kilburn and Co., the Andrew Yule and Co., the Gladstone, Wyllie and Co., the Thomas Duff and Co. and the McNeill and Co. mobilised substantial funds chiefly from the UK for jute mills in Bengal³. There were also instances where the managing agents successfully persuaded international industrial houses, as called by Chapman⁴, to make investments in Bengal's jute industry. The example in point is the Henderson and Co. which persuaded the Borneo Company Limited to invest in Bengal although it intended in its Deed of Settlement to do business in the mineral industry, and that too, 'in the island of Borneo or in some part or parts thereof'⁵. In fact, the Hong Kong Daily News criticized this investment project in June 1858: 'This Borneo Company not only trades in the capacity of an untrammelled individual with as much regard to Borneo as to any other places in which he might have business relation, but it is also embarking large sums in the erection of machinery in Bengal ... Such an enterprise is, of course, highly laudable, but what in the name of all that is consistent, has the Borneo Company to do with it?'⁶. By the manoeuvre of the managing agent, indeed, such an investment was made possible. We have also certain instances of innovations in financial instruments by managing agents. Thus, for example, the James Jardine, Skinner and Co. floated the Kamarhatty Mill of 202 looms with a paid-up capital of only Rs. 400,000 (as against an estimated investment of Rs. 707,000), and the

³ Playne, Bengal and Assam, p. 644

⁴ Chapman, British based investment, pp.230-251

⁵ Cox and Metcalfe, The Borneo company limited, p. 60

⁶ Cited in *ibid*, p. 64

rest was raised by way of debenture and loans⁷. Indeed, the high debt-equity ratio enabled the company to pay large dividends on very small earnings⁸.

Apart from the advantages in the mobilisation of funds, the managing agency system lent two other important supports to the industry. In the first place, the agents, especially the larger ones, used to manage a number of companies in diverse fields of industries. Thus, for example, the Bird and Co. was involved in more than 20 lines of business; the Jardine, Skinner and Co. in eight lines of business and the Gillanders, Arbuthnot and Co. in six lines of business⁹. Since they managed a large number of companies together, the overhead costs for individuals companies must have been low due to the scope economies that arose out of technical sub-additivities in management. Moreover, the advantages of vertical integrations were often enjoyed by jute mills through their managing agents. Since a number of agents, such as the Jardine, Skinner and Co., Bird and Co. and the Gillanders, Arbuthnot and Co. simultaneously managed along with jute mills the companies belonging to coal, water and railway transportation, banking and insurance, as well as electricity in later days, jute mills used to get those products and services at easier terms and conditions. Also, when a particular managing agent managed a number of jute mills together – such as the Thomas Duff and Co. who managed the Samnuger Jute Mill, the Titaghur Jute Mill and the Victoria Jute Mill employing more than

⁷ Playne, Bengal and Assam, p. 131

⁸ Carter, Jute and its manufacture, p. 169

⁹ Playne, Bengal and Assam, pp. 85,128,204

100 European and 31,000 native workers together¹⁰ – there must have been enormous scale economies among Calcutta jute mills operating under the managing agency system.

The managing agency system thus catalysed the initial development of modern jute mills in Bengal. The industry was privileged in three additional aspects, apart from what we have already accounted for above. The foremost one surely involves the question of land. There is ample literature describing Dundee jute mills to have scrambled in multi-storied buildings with an acute shortage of space as well as water. Indeed, Turner argues that the evolution of Dundee town during the eighteenth-nineteenth centuries was largely conditioned by the courses of local streams and spring sources¹¹. In contrast, both land and water were at a great plenty in Bengal. As a result, the Calcutta mills not only always afforded very spacious office accommodations but also comfortable factory sheds, stretching over extensive plots of land. The Victoria Mill, for example, had a land area of about 40 acres, which no Dundee mill could even dream of¹². In majority of the cases, however, the mills were constructed on the shed system with a roof supported by iron columns of about 20 feet high and proportionately large girders, so that the structures were very lofty. Those sheds were generally 450 feet long and 300 feet wide with about three acres of floor space, and were kept entirely open on all sides so that uniform temperature was ensured¹³. In fact, mill

¹⁰ Ibid, p. 103

¹¹ Turner, *The evolution of the pattern of the textile industry*, p. 109

¹² Carter, *Jute and its manufacture*, p.165

¹³ Ibid, p.169

managers and foremen from Dundee got charmed in those contrasts between Dundee and Calcutta mills, and loved to work in the latter. As Whatley describes, 'Unlike in Dundee, where access to water and space were at a premium and mills and factories and much housing had to be built several storeys high, and in which conditions were cramped and airless, most Indian mills were well-built, single storey structures, spacious and well-lit – something that often came as surprise those who had grown accustomed to life and work in the densely packed town of Dundee, its mills and chimneys crammed alongside the deteriorating housing stock'¹⁴.

Secondly, Calcutta mills also enjoyed a cost-effective transportation network. They were largely located on the bank of the river Hooghly, which is a branch of the Ganges, the Padma being its another branch flowing across the rich jute-growing belt of the present-day Bangladesh with its numerous tributaries. Through those tributaries and branches of the Ganges the mills used to get the supply of raw jute from the hinterland. The river transport also provided the mills with an easy accessibility to the up-country markets in the north and the port of Calcutta in the south. The industry also enjoyed a unique coverage of railway transport because of the concentration of the mills within narrow geographical limits. Relative to Calcutta, the Budge-Budge Mill was located 12 miles below and the Gouripur Mill 28 miles above, with other mills dispersed in between¹⁵. Most of those mills were situated on the left

¹⁴ Whatley, Dundee and India: Roots, rivalry and interdependence, p.6

¹⁵ Carter, Jute and its manufacture, p. 166

bank of the Hooghly with their sidings connected with the Eastern Bengal State Railways. The mills on the right bank of the river similarly enjoyed the service of the East Indian Railways. Through the Jubilee Bridge over the Hooghly at Naihati, close to Gouripur and just above Chandernagore, the East India Railways was connected with the Eastern Bengal State Railways that ran across the heartland of Bengal's jute districts.

Thirdly, the industry got the advantages of very large deposits of coal seams in the Asansol-Raniganj belt (only about 40 miles away from Calcutta), which began to be mined extensively under European enterprises at large from the early 1840s. In the early 1860s, the first railway service was introduced in Bengal connecting Asansol with Calcutta so that the cluster of jute mills in and around the city could obtain a smooth flow of coal at low costs. Indeed, the development of collieries in Bengal along with the construction of railways from the mid-nineteenth century onwards was a great boon to the modern jute industry at its nascent stage of development.

It is of topical interest to find out the involvement of Dundee, or more generally Scotland, in the development of Bengal jute industry. In respect of investment, their direct involvement was not, however, substantial since much of Dundee's surplus fund from the business of jute used to be invested in North America¹⁶. While Dundee did not take seriously into consideration the contemporary development in Bengal during the first two decades, it began to increasingly show interest in it

¹⁶ Sethia , *The Rise of the Jute Manufacturing Industry in Colonial India* , p. 80

from about the mid-1870s. Three so-called Dundee mills came in succession during 1874-82: the Samnuggar Mill, 'really the first Dundee concern', in 1874¹⁷, the Titaghar Mill, 'the second Dundee concern', in 1882 and the Victoria Mill in 1882. All these companies subsequently came under the managing agency of the Thomas Duff and Co., which was formed and registered in Scotland in 1883 for carrying out the managing agency business for jute mills in Bengal¹⁸. While it promoted the Titaghar Mill the other two companies were acquired later on. Of the latter companies, again the Victoria Mill was set up by a Dundee-based entrepreneur, James Luke, Junior. Under the management of the Thomas Duff and Co., however, these jute concerns grew rapidly over the decades owning as many as nine mills in 1916 with 4,343 looms in aggregate¹⁹. It is also learnt that the London-based managing agent the MacNeill and Co. mobilised fund for the Ganges Mill (an estimated amount of Rs. 1.05 million) chiefly from a Scottish town, Glasgow, and London²⁰. The investment of the Hastings Mill also came chiefly from Scotland since the Birkmyre Brothers erected it by transferring the entire machinery of Greenock Sacking Company in Lyndoch street, Greenock²¹. Two more renowned managing agents of Bengal jute mills were based on Scotland, namely the Finley, Muir and Co. and the Mackinnon, Mackenzie and Co. These apart, the Borneo Company Ltd. were related with Scottish-based mercantile network through John Harvey and Robert

¹⁷Carter, Jute and its manufacture, p.168

¹⁸ Playne, Bengal and Assam, p. 103

¹⁹ Carter, Jute and its manufacture, p.169

²⁰ Playne, Bengal and Assam, p. 85

²¹ Ibid

Henderson²². In addition to providing investment, these Scottish managing agents provided much-needed entrepreneurial and managerial supports to the initial development of Bengal jute mills. These supports were in addition to what Dundee contributed to Bengal as a monopoly supplier of plants and machinery as well as trained manpower at managerial and supervisor levels²³.

Although the industry-wise data, as analysed above, depict a rosy picture about the initial phase of the industry's development, it was *prima facie* not really so in the firm-level data. Many pioneers of this venture burnt their fingers in the experiment. Thus, for example, George Acland, a Devonshire entrepreneur²⁴ who set up the first jute mill (actually jute spinning mill) in Bengal in 1855, made good profits from it in first two years but it was burnt down in 1858. He re-started it as the Ischera Yarn Mills Co. Ltd. with about 100 looms. But it became sick in 1868 and was sold by auction to the Barrodaile, Schiller and Co. who, as its managing agent, launched it in the name of the Calcutta Jute Mills Co. Ltd. with 260 looms. It again became sick in 1877 leading to the transfer of agency to the A.R. McIntosh and Co.. Ironically, it became bankrupt this time in 1880 and in the following year, the Champdany Co. took over and re-christened it as the Wellington Mill²⁵. The story of this pioneer concern shows the severity of teething problems of Bengal jute industry. Similar was the fate of an American entrepreneur, Richard

²² Cox and Metcalfe, *The Borneo company limited*, p. 59

²³ Sethia, *The Rise of the Jute Manufacturing Industry in Colonial India*, p. 87

²⁴ Carter, *Jute and its manufacture*, p.167

²⁵ *ibid*

Macallister, who floated as many three jute mills in Bengal. His first venture in 1872, the Fort Gloster Mill, became sick in 1879 and remained closed for some years when its share of Rs. 100 each was plumped to Rs. 8²⁶. It was ultimately taken over by the Kettlewell, Bullen and Co. His second venture was the Oriental Jute Co. Ltd., started in 1874, but it also became sick in 1878 when Henry S. Cox, a Dundee-based entrepreneur, took over the agency. But a huge loss was incurred in the next year so that its agency was finally passed on to the Bird and Co²⁷. Wallace notes, 'Macallister was equally unhappy with his next attempt - the Rustomjee Twine and Canvas Factory, now the Central.'²⁸ It was started with 125 looms in 1875 but became sick very soon afterwards. In 1880, J. Webster of Dundee took over its agency and re-started it as the Goosery Jute Mill with 200 looms. But it again collapsed in 1885 and its agency passed on to a Parsee entrepreneur of India, Chunda Ramjee. It is, however, learnt that after making a fortune out of it Ramjee sold it to the Andrew Yule and Co. in 1890. Similar was the fate of the Bengal Jute Pressing and Manufacturing Co., commissioned by the Schoene, Kilburn and Co. in 1874 with 172 looms. It collapsed in 1877, passed on to the Gillandars, Arbuthnot and Co., and was re-started as the Balliaghata Co. Ltd²⁹. Fallen to sickness it was taken over by the Barnagore Co. in 1881. Also, James Luke, Junior, a Dundee-based entrepreneur, established

²⁶ Wallace, Romance of jute, p. 30

²⁷ Carter, Jute and its manufacture, p. 168

²⁸ Wallace, Romance of jute, p. 30

²⁹ Carter, Jute and its manufacture, p. 168

Victoria Mill in 1882 but he could not make it functional till 1886, and afterwards the Thomas Duff and Co. took it over³⁰.

II

While modern jute mills had been emerging in Bengal, the global jute market was dominated by Dundee's jute mills, on the one hand, and the cottage jute industry of Bengal, on the other. In such a competitive environment, those emerging mills sought to enter into the domestic markets of the country, and consolidated their positions there through 1866. Only thereafter did they venture for foreign markets. It is learnt that the Calcutta mills sent only a small assignments to Burma before 1866³¹.

To understand market dynamics between Bengal's traditional and modern jute industries, we estimate the time series of their exports (both outside India and its domestic markets outside Bengal) in Table 4.4. The series of total export in Column 2 of the table is obtained by aggregating the export to foreign ports and that to the domestic ports outside Bengal. Those are available in terms of quantity, which we have converted into value series on the basis of prevailing prices, namely, Rs.0.72 per bag³².

The export series of mill-made bags is estimated under the assumption that jute mills in Bengal ran under full utilization and that their outputs were entirely sold outside Bengal. Based on the number of

³⁰ Ibid, p. 169

³¹ Playne, Bengal and Assam, p. 643

³² Government Administrative Report in 1872-73, p. civ-statistical returns

their looms in various years, the export volumes of the modern sector are estimated assuming the average level of production at 12,469 bags per loom per year³³. Deducting the resultant series from total export of bags we obtain the export series for hand-made jute bags.

Table 4.4: Estimated exports of hand- and mill-made jute products from Bengal, 1863-71 (in pieces)

Year	Total export	Mill-made bags	Hand-made bags
1863-64	22,484,777	9,725,820 (13.26)	12,758,957 (56.74)
1864-65	24,170,636	13,591,210 (56.23)	10,579,426 (43.77)
1865-66	37,989,581	13,591,210 (35.78)	24,398,371 (64.22)
1866-67	31,488,221	13,591,210 (43.17)	17,897,011 (56.83)
1867-68	31,255,644	13,591,210 (43.49)	17,664,434 (56.51)
1868-69	32,444,040	13,591,210 (41.89)	18,852,830 (58.11)
1869-70	33,588,962	13,591,210 (40.46)	19,997,752 (59.54)
1870-71	30,168,209	15,212,180 (50.42)	14,956,029 (49.58)
1871-72	31,568,549	15,212,180 (48.19)	16,356,369 (51.81)
1872-73	31,810,795	18,429,182 (57.93)	13,381,613 (42.07)

Source: Estimated from Kerr, Report on the cultivation of jute, Appendix L
N.B. The bracketed figure represents the percentage of total.

It appears from the table that in 1863-64 hand-made bags constituted about 57 per cent of Bengal's total export of jute bags. Though they reduced to 44 per cent in the next year, their market supremacy was regained in 1865-66 itself, and continued for a couple of years thereafter. The table shows that the share of hand-made jute bags in Bengal's aggregate export hovered in the range of 56.50-59.50 per cent during 1866/67-1869/70. Only in 1870-71, however, the mill-made bags superseded their counterparts, the market share of former being 50.42 per cent and that of the latter 49.58 per cent. Though they lagged behind in the following year, their share became about 58 per cent in 1872-73.

³³ In 1872-73, the Baranagar mill produced 9.5 million from 16,000 ton of raw jute (Administrative Report, 1872-73, p. 226). Therefore one ton of raw jute produced $9,500,000/16,000 = 593.75$ bags. In 1878-79, at Calcutta mills, 260 looms consumed 109,294 cwt (Administrative Report 1878-79, p. 206). Therefore, one loom consumed = $109,294/260 = 420.36$ cwt. = 20 ton (at 1 ton=20cwt) = 21×593.75 bags = 12,465 bags per year.

Table 4.5 shows that this trend accelerated in the following years. The share of mill-made bags increased to 70 per cent in 1875-76, 86.81 per cent in 1877-78 and 85.66 per cent in 1878-79. Thus, there was a complete victory of modern jute mills over the traditional sector by the close of the 1870s.

If we take into account only the domestic markets (outside Bengal), the Calcutta mills are found in Table 4.5 to have acquired more than 95 per cent of the market by 1885-6. In certain years thereafter, the market share of handloom products did increase, but it was due to the supply-side constraints for power loom products.

Table 4.5: Division of Indian and foreign markets between the modern and traditional industries in Bengal (in piece)

Year	Indian ports			Foreign ports		
	Power-loom	Hand-loom	Total	Power-loom	Hand-loom	Total
1875-76	21,640,648* (70.09)	9,236,034* (29.91)	30,876,682	17,554,904	1,139,111 (6.08)	18,717,850 ©
1877-78	28,450,923 (86.81)	4,324,528 (13.19)	32,775,451	24,416,369	677,000 (2.69)	25,093,369
1878-79	17,006,438 (85.66)	2,848,372 (14.34)	19,854,810	42073859	1,828,400 (4.16)	43,902,259
1884-85	37,100,123 (83.31)	2,661,073 (6.69)	39,761,196	76,708,454	4,918,150 (6.02)	81,616,904
1885-86	39,566,071 (95.36)	1,928,590 (4.64)	41,494,661	61,687,919	496,712 (0.79)	62,184,631
1886-87	34,392,655 (93.66)	2,331,780 (6.34)	36,724,435	63,499,413	404,150 (0.63)	63,903,563
1887-88	44,292,003 (95.85)	1,921,550 (4.15)	46,213,553	72,569,165	406,450 (0.55)	72,975,615
1888-89	35,859,655 (95.41)	1,723,160 (4.59)	37,582,815	95,862,173	1,044,450 (1.07)	96,906,623
1889-90	36,048,488 (95.18)	1,829,400 (4.82)	37,877,888	94,681,874	631,375 (0.66)	95,313,249
1890-91	49,841,506 (90.56)	5,198,550 (9.44)	55,040,056	95,507,129	1,105,800 (1.14)	96,612,929

Source: Government Administrative Report in different years.

N.B.: © The series also includes the equivalent pieces of bags for cloths. This is derived by dividing the value of cloth by the price of bag.

*In the absence of segregated data, estimation is done on the basis of the actual ratio between them for Bombay, viz. 4,954,940 handloom bags and 11,651,430 powerloom bags, in 1875-76.

Table 4.6 displays the exports of domestically produced jute bags (handloom and powerloom taken together) to various domestic markets in India (outside Bengal) during 1863/64-1872/73. Obviously the powerloom sector had increasing shares in these markets. The table indicates that the four ports, namely Bombay, Madras, Rangoon and Akyab, took the bulk consignments from Bengal during 1863/64-1867/68. Their aggregate share was more than 97 per cent of the total. Although the last one became dormant since 1868-69, the other three ports retained their dominance. Among these markets, Bombay was certainly far ahead up to 1870-71 gradually losing its importance thereafter. In 1863-64, it absorbed 72.66 per cent of Bengal's jute consignments; but the share gradually fell down to 50.35 per cent in 1870-71. In the following two years, Bombay consumed 40.07 per cent and 36.37 per cent respectively. Rangoon became the most lucrative market during the early 1870s with its market shares at 41.80 per cent in 1871-72 and 53.28 per cent in 1872-73. It should be noted that the share of Rangoon was only 11.80 per cent in 1863-64, but it increased through oscillations to 30.45 per cent in 1868-69 and to 39.31 per cent in 1870-71. The market share of Madras also improved over these years. It was 3.93 per cent in 1863-64 but 16.93 per cent in 1868-69 and 17.64 per cent in 1871-72. In absolute term, the domestic market of Bengal jute products (outside Bengal) was Rs. 3,64 million in 1863-64, and expanded to Rs. 5,39 million in 1868-69 and Rs. 6,49 million in 1872-73.

To indicate the share of the mill sector in these markets, we take into account the information, as stated above, that the mills sold their output only in the domestic markets till 1866. Hence, Column 3 of Table 4.4 represents the sale of the mills in the domestic markets. Assuming the price of bags at Rs. 0.22, the value series of the last column of Table 4.6 may, however, be converted into the quantity series of domestically produced bags sold in the domestic markets. The figure comes out to 16,532,509 for 1863-64, 19,176,318 for 1864-65, 24,377,295 for 1865-66, and 15,188,694 for 1866-67. On comparison we then find that the mill-made bags captured a domestic market share of 58.83 per cent for domestically manufactured bags in 1863-64. The share increased to 70.87 per cent in 1864-65 but fell again to 55.76 per cent in 1865-66. Since for 1866-67 the figure is 13,591,210 pieces for mill-made bags and 15,188,691 for total domestically manufactured bags, the mills' share became 89.48 per cent. Thus, the Calcutta mills occupied the lion's share of India's domestic market by the end of the 1880s. On the support of this domestic market the modern jute industry made its initial stride of development.

Table 4.6: Export value of bags, cloth, twine and rope (both handloom and powerloom) from Calcutta to Indian ports during 1863-1873 (in Rs.)

Year	Bombay	Madras	Rangoon	Pondichery	Bimlipatm	Akyab	Cochin	Cocanada	Gopalpur	Moulmein	Others*	Grand total
1863-64	2,642,816 (72.66)	142,982 (3.93)	429,314 (11.80)	3,502	11,560	393,551 (10.82)	1,072	6,195	1,000	3,250	1,910	3,637,152
1864-65	2,395,784 (56.79)	286,535 (6.79)	1,138,519 (26.99)	Nil	38,721	269,719 (6.39)	485	11,881	18,202	16,675	42,269	4,218,790
1865-66	3,389,081 (63.19)	393,731 (7.34)	985,817 (18.38)	1,200	12,415	447,881 (8.35)	22,172	7,543	1,869	30,357	70,939	5,363,005
1866-67	2,231,085 (66.77)	279,250 (8.36)	572,206 (17.12)	Nil	11,205	169,447 (5.07)		26,957	1,860	39,222	10,280	3,341,512
1867-68	2,542,000 (63.84)	177,193 (4.45)	776,561 (19.50)	Nil	4,957	394,527 (9.91)	2,766	51,428	5,712	10,800	15,705	3,981,649
1868-69	2,828,261 (52.51)	911,681 (16.93)	1,639,775 (30.45)	6,066	Nil	Nil	Nil	Nil	Nil	Nil	Nil	5,385,783
1869-70	3,715,201 (66.43)	545,192 (9.75)	1,328,969 (23.76)	3,025	Nil	Nil	Nil	Nil	Nil	Nil	Nil	5,592,387
1870-71	1,652,470 (50.35)	339,390 (10.34)	1,290,111 (39.31)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	3,281,971
1871-72	2,034,568 (40.07)	895,837 (17.64)	2,126,857 (41.80)	20,218	Nil	Nil	Nil	Nil	Nil	Nil	Nil	5,077,480
1872-73	2,359,447 (36.37)	659,069 (10.16)	3,456,443 (53.28)	12,536	Nil	Nil	Nil	Nil	Nil	Nil	Nil	6,487,495

Source: Kerr, Report on the cultivation of jute, Appendix L

* Calicot, Cannanore, Tellichery, Alipore, Badagory, Corringa, Mangalore, Monsurocotta, Naracole, Nigapatam, Quilandi, Tuticorin, Arracan, Bassei.

The handloom sector of Bengal had already been cornered in the foreign market by 1875-76. Table 4.5 shows that it accounted for only six per cent of India's jute products sold in such markets. About 94 per cent of it was under the control of Bengal mills. This share for the handloom sector was further squeezed to less than one per cent by the second half of the 1880s. It should be noted that initially Dundee mills cornered Bengal's handloom products in those markets; and the process was accentuated after the entry of Bengal's mills in those markets.

In the foreign markets, however, Bengal mills encountered main competition from their counterparts at Dundee. Table 3.6 in the previous chapter helps us to understand how they won over the competition. It appears that from about 1865-66 Calcutta mills began to invade countries lying in Far East where, as we already discussed, they enjoyed comparative advantages over Dundee mills similar to their advantages in India's domestic market. In four such countries, namely Java, China, Strait Settlements and Ceylon, Bengal's aggregate export was only Rs. 298,260 in 1864-65, but increased to Rs. 400,713 in 1865-66. Remaining at slightly depressed state of about Rs. 350,000 per annum in the following two years, it further increased to Rs. 841,713 in 1868-69 and Rs. 887,631 in 1869-70. Since those were decaying years for Bengal's hand-loom jute, such a rapid market expansion must have been due to Bengal's modern jute mills. The market dynamics in those countries were such that the value of export fell there in the initial years

because of the competitive failures of Bengal's traditional industry, but it began to rise when modern jute mills entered into those markets. Hence, the turning points from falling to rising trends in those series should indicate when Bengal mills entered into those markets; and also, the increasing market shares thereafter should be attributed to those mills. Under such an assumption we conclude that Bengal mills entered into the market of Strait Settlements in about 1865-66, into Ceylon in 1868-69, and China in 1869-70.

Bengal mills then gradually advanced to the markets of Australia, New Zealand and North America. An analysis of Table 3.6 in the previous indicates that Bengal mills entered into the market of Australia and its neighbourhood in 1868-69, and into North America in 1869-70. The series for former during 1863/64-1867-68 indeed includes the exports to New South Wales. It became only Rs. 68,839 in 1867-68. In the next year, it rose to Rs. 177,321 and reached at Rs. 380,567 in 1872-73 through oscillations. In the Continental markets, Bengal mills could not capture any significant share because of their domestic industries which grew up under the patronage of their respective governments. They, however, succeeded in the markets of North America which had once been the stronghold of Bengal hand-made jute. Table 3.6 indicates that Bengal sold her hand-made jute items by Rs. 2.76 million in 1866-67 but the amount shrank to Rs. 690,589 in 1868-69. Possibly due to modern mills, it again grew to Rs. 2.80 million 1870-71.

The export series for 1873/4-1889/90 is presented in a separate table (Table 4.7) since the market destinations underwent certain changes in this period. Three important conclusions are suggestive from this table³⁴. First, the foreign markets from Bengal jute grew at a high rate in this duration³⁵. An overall growth rate of 68.76 per cent per annum prevailed in the series during 1873/74-1889/90. In fact, much of this growth was due to the modern jute mills in Bengal. Secondly, Australia and New Zealand together constituted the most important outlet for such products, sharing about 37 per cent of the market. It was followed by Strait Settlements, the United States of America, the United Kingdom and China. Their market shares were in the order of 14.61 per cent, 12.30 per cent, 9.75 per cent and 9.15 per cent. Thirdly, and most importantly, the market grew very fast in 1887-88, notably at 46.27 per cent, attaining a value of Rs. 23.33 million, and remained buoyant in the following year also. Most interestingly, the growth was impressive for the UK market also. Never during 1873/74-1887/8 had Bengal exports to that market crossed the value of Rs. 1.45 million per annum. But it became Rs. 3.52 million in 1888-89 and Rs. 5.07 million in 1889-90. The rates of growth in these two years were 647 per cent and 44.10 per cent respectively. These statistics signify that the Dundee mills must have started to collapse from 1888-89 onwards in the face of competition from Bengal mills.

³⁴ For the quantity series of these data, see Annexure 4.1

³⁵ Moral and material progress, 1878, vol.-57, p. 59

Table 4.7: Value of export of bags from Bengal to different foreign ports during 1873-1890

(in Rs.)

Year	United kingdom	United states	Australia and New Zealand	Strait Settlement	Egypt	China	Cape of Good Hope	Ceylon	Other countries*	Total
1873-74	21,685	240,466	836,130	476,595	39,637	50,344	31,237	126,719	109,518	1,932,331
1874-75	9,972	50,862	489,122	1,302,947	21,510	115,893	3,950	194,656	9,902	2,198,814
1875-76	199,237	409,305	1,630,002	1,150,286	502,896	141,971	6,518	191,920	101,915	4,334,050
1876-77	392,564	1,830,949	2,004,571	703,545	445,454	- 761,903	9,091	102,697	142,879	6,393,653
1877-78	120,591	797,947	2,981,862	1,616,342	766,757	323,213	64,966	89,588	187,869	6,949,135
1878-79	1,840,274	1,444,311	3,046,808	1,443,143	583,063	1,105,761	174,659	52,218	412,731	10,102,968
1879-80	924,522	1,391,191	3,515,349	1,869,372	721,693	1,876,759	197,253	40,977	546,654	11,083,770
1880-81	935,292	2,631,363	3,133,384	1,226,955	465,410	1,221,717	446,990	43,691	550,459	10,655,261
1881-82	29,592	905,884	6,116,059	1,500,959	158,603	1,287,022	264,393	34,721	345,437	10,642,670
1882-83	209,918	1,686,932	7,427,239	1,895,141	190,304	1,746,365	222,069	26,882	577,027	13,981,877
1883-84	591,250	1,883,889	4,078,903	1,733,381	441,598	1,825,136	485,047	99,714	1,149,790	12,288,708
1884-85	1,223,127	2,214,836	4,761,125	2,735,651	708,667	756,137	229,957	150,335	1,114,620	13,894,455
1885-86	1,238,886	1,378,994	3,131,033	1,151,445	706,740	461,120	372,955	50,958	1,043,416	9,535,547
1886-87	1,431,880	1,808,586	2,586,616	1,106,769	537,430	1,051,281	329,549	64,929	1,511,831	10,428,871
1887-88	471,552	1,650,376	7,701,675	2,286,432	383,461	1,052,656	623,778	63,932	1,720,175	15,954,037
1888-89	3,520,808	1,727,646	7,914,544	2,804,587	687,587	1,747,281	999,007	68,007	3,865,870	23,335,337
1889-90	5,073,408	953,976	6,748,019	2,313,335	820,203	1,568,229	997,803	107,716	4,609,866	23,192,555
Average	1,072,621	1,353,383	4,006,026	1,606,876	481,236	1,005,458	321,131	88,804	1,058,821	

*Austria, France, Italy, Malta, Russia, Turkey, Mauritius, Aden, South America, Natal, Japan, Java, Maldives, Persian Gulf and others.

Source: Annual statement of the sea-borne trade of Bengal with foreign countries during 1873/74-1889/90.

Compared to the market of bags, the market of cloth was much less extensive for Bengal jute mills. Table 4.8 displays a time series of its export to different foreign ports during 1875/76-1889-90 (for the quantity series, see Annexure 4.2). The most important outlets for this product were the United States of America and the United Kingdom, which together accounted for 77.08 per cent of the market on average during the period.

Table 4.8: Export of jute cloth from Bengal to foreign ports, 1875-1890.
(in Rs.)

Year	United Kingdom	United States	Other Countries	Total
1875-76	216,504	144,475	86,513	447,492
1876-77	162,411	377,273	154,128	693,812
1877-78	18,081	298,237	38,852	355,170
1878-79	194,189	261,176	62,691	518,056
1879-80	110,271	177,178	319,544	606,993
1880-81	21,065	303,449	181,272	505,786
1881-82	187	44,992	71,646	116,825
1882-83	62,537	237,205	239,094	538,836
1883-84	123,420	292,123	325,356	740,899
1884-85	330,290	807,696	160,334	1,298,320
1885-86	403,372	799,261	225,368	1,428,001
1886-87	156,936	625,691	192,225	974,852
1887-88	77,525	810,641	259,975	1,148,141
1888-89	452,232	760,601	289,166	1,501,999
1889-90	1,073,124	2,058,120	783,562	3,914,806
Average	226,810	533,208	225,982	985,999

Source: Annual statement of the sea-borne trade of Bengal with foreign countries during 1875/76-1889/90.

This table also underlines the decline of Dundee mills against the competition of Bengal mills. The series of total export shows that there was an irregular declining trend in it, reaching at a nadir of

Rs. 116,825 in 1881-82. In that year, Great Britain imported only Rs. 187 and the USA Rs. 44,992. Possibly that was the peak period of development for Dundee mills. But Bengal mills started marching ahead since then, both in aggregate and individually in the UK and the USA³⁶. The series rose from Rs. 0.12 million to Rs. 1.50 million in aggregate, from Rs. 187 to Rs. 0.45 million in the UK and from about Rs. 45,000 to Rs. 0.76 million in the USA, all in the duration of 1881/82-1888/89. Moreover, similar to the markets of bag, these markets for cloth expanded astonishingly in 1889-90. The rates of growth in them are worked out at about 161 per cent, 137 per cent and 171 per cent, respectively. These statistics certainly signify the competitive failures of Dundee mills by the end of the 1880s against the development of jute industry in Bengal.

III

Not only did Bengal mills defeat their counterparts at Dundee in foreign markets, but they could successfully compete in the British domestic market as well. Bengal first captured her domestic yarn market. Although it represented the decline of an important segment of the industry, it helped the weaving branch to be more cost-effective since yarn became available at lower prices. Table 4.9 shows the import of jute yarn in the United Kingdom during 1875-1904.

³⁶ *Moral and material progress, 1886-v-49*, p. lv

Table 4.9: Import of jute yarns from different countries into U.K

Year	Quantity (million lbs)	Value ('000 £)	Price (£ per lbs)	year	Quantity (million lbs)	Value ('000 £)	Price (£ per lbs)
1875	1.62	55	33.95	1890	4.22	97	22.98
1876	1.71	61	35.67	1891	3.02	95	31.45
1877	1.03	38	36.89	1892	1.96	52	26.53
1878	0.75	28	37.33	1893	1.55	50	32.25
1879	2.40	76	31.66	1894	2.13	54	25.35
1880	4.85	163	33.60	1895	2.62	70	26.71
1881	2.32	76	32.75	1896	3.03	43	14.19
1882	1.41	45	31.91	1897	5.08	61	12.00
1883	1.57	48	30.57	1898	4.18	54	12.91
1884	2.53	85	33.59	1899	3.58	46	12.84
1885	8.09	297	36.71	1900	6.34	89	14.03
1886	3.95	125	31.64	1901	8.39	107	12.75
1887	2.56	67	26.17	1902	5.17	70	13.53
1888	3.65	114	31.23	1903	4.98	84	16.86
1889	3.42	97	28.3	1904	4.21	76	

Source: Report of tariff commission, 1905, vol.2, p. 3788.

The import of jute yarn is thus found to have increased in quantity from 1.62 million lbs. in 1875 to 4.85 million lbs. in 1880 and further to 8.09 million lbs. in 1885, and, in value term, from £55,000 to £163,000 and further to £297,000 in respective years. A falling trend, however, swept over both the series as Dundee lost its competitive edge in the weaving branch also. While we have already seen her export market to have been rapidly dwindling in this period, we will shortly see that its domestic market was also under serious threat around that period. Table 4.9 shows that the import of jute yarn fell from 8.09 million lbs. in 1885 to 4.21 million lbs. in 1904 in quantity, and in value, from £297,000 to £76,000 in the same duration, although some short-run revivals were there in between. Such a decline took place even where

there was a steady decline in the prices of imported jute yarns. The table shows that their average price fell from £36.71 per lbs. in 1885 to £12.75 per lbs. in 1901. These lower prices were possibly due firstly to the setback in the weaving section, and secondly, to the in-takes of inferior jute yarns since 1885. It should be noted that the majority of these imports in the UK was from the mills of Calcutta.

Table 4.10, indeed, highlights the dismal picture of Dundee's spinning branch of the jute industry.

Table 4.10: Growth of Dundee jute industry during 1874-1904

year	No. of factories				No of spindles	No of power looms
	Spinning	Weaving	Spinning & Weaving	Total		
1874	26	20	63	109	229,000	9,599
1878	26	39	50	115	219,000	11,288
1885	30	37	51	118	264,000	12,083
1890	25	37	51	113	279,000	14,107
1905	25	44	38	107	277,000	13,704

Source: Report of Tariff Commission, 1905, vol.2, p. 3788.

This table shows that the number of spinning mills at Dundee remained stagnant during 1874-78; although four such mills came up during 1878-85, five existing mills were closed down in the following quinquennium. In the next 15 years, the number of such mills remained static at 25. Severe depression also took place in those factories where both spinning and weaving were jointly undertaken. The table shows that the number of such factories declined steadily from 63 in 1874 to 38 in 1905. Possibly, some of them were subsequently converted into exclusive weaving factories so that a rising trend is noticed in the number of such

factories during 1874-1904. Insofar as the number of spindles and power-looms are concerned, the industry definitely witnessed a setback after 1890. During 1890-1905, the former declined from 279,000 to 277,000, and the latter from 14,107 to 13,704.

The weaving branch of the industry, however, met a setback in the domestic market from the 1890s. Table 4.11 displays the trend of jute goods import in the U.K. during 1897-1904.

Table 4.11: Imports of jute goods from different countries into U.K
(in thousand £)

Year	Total imports	Re exports	Domestic consumption
1897	1,629	1,255	374
1898	1,593	1,227	366
1899	1,506	1,234	272
1900	2,151	1,673	478
1901	2,209	1,832	377
1902	1,995	1,589	406
1903	2,367	2,038	329
1904	2,208	1,920	288

Source: Report of tariff commission, 1905, vol.2, p.3740.

In 1897, the import of manufactured jute in the U.K. was £1.63 million, out of which £374,000 was absorbed in the domestic market, and £1.26 million were re-exported. While the level of domestic absorption varied in the range of £270,000- £400,000 during 1897-1904, the level of re-export increased steadily from £1.26 million to about £2 million during the same period. Britain's import of jute goods thus spoiled the export market of Dundee manufacturers. If we deduct the amount of re-export from the export series in Table 3.4, the U.K.'s

exports of domestically manufactured jute goods come to £847,000 in 1897, £569,000 in 1898, £202,000 in 1900, £2,000 in 1903 and £33,000 in 1904. These surely speak about a total eclipse of Dundee jute mills in the global market.

The comparative edge of competition between Bengal and Dundee mills is more clearly understood if we compare the export series of Bengal mills to the UK and that of Dundee mills to Bengal (vide Table 4.12).

Table 4.12: Estimated quantity of export of bag from Bengal and Dundee (in ton)

Year	Bengal's Export to U.K	Dundee's export to Bengal	Year	Bengal's export to U.K	Dundee's export to Bengal
1871-72	4,250	172,71	1878-79	N.A	212,12
1872-73	52	202,05	1879-80	N.A	237,97
1873-74	1,48	231,25	1880-81	N.A	231,94
1874-75	63	213,51	1881-82	N.A	246,44
1875-76	13,86	170,83	1882-83	N.A	296,89
1876-77	31,24	191,26	1883-84	38,898	367,90
1877-78	N.A	182,49	1884-85	117,995	254,07

N.B. * Number of bag is expressed in terms of ton. The norm has been derived from the production figure of the Baranagar Mill in 1872-73 which is available both in terms of number of bags and in tons, notably 9.5 million bags and 16,000 tons in weight. Hence, each bag is equivalent to 16/9500 tons.

From the above table we see that during the fourteen years of 1871/72-1884/85 the total export of bags was 16,619,478 ton from Bengal as against 3,211,435 ton from Dundee to Bengal. Thus, Bengal mills could sell five times more in the UK than what Dundee mills could sell in Bengal. The given series in the table shows that the UK market for the mills in Bengal grew at 23.07 percent while it was only 3.36 percent

for Dundee mills in Bengal. The export of bags from Bengal to the UK is seen to have increased from 4,250 ton in 1871 to 117,995 ton in 1884-85 while that from Dundee to Bengal rose from 172,706 ton to 254,067 ton in the same duration. These signify that while the balance of trade in jute products was in favour of Dundee (by 168,456 tons) in 1871, it turned in favour of Bengal in 1884-85 with a surplus of 136,072 tons. That Dundee's decline continued relentlessly in the second half of the 1880s is learnt from the following table (Table 4.13). It shows that the import of bags suddenly fell from 43,080 pieces in 1885-86 to 10,022 pieces in 1886-87, a decline of 76.73 percent in a single year. In the next year, it sharply increased by 43.66 fold, but the final end came thereafter. In 1888-89 only 50 bags were imported from Dundee and it became zero in 1889-90. Similarly, the import of cloth amounted to 487,447 yards in 1885-86 but only 235,785 yards in 1886-87, a decrease of 51.62 percent in a single year. Bengal took a larger amount of cloth in 1887-88 but there was a 6.64 percent fall during the following quinquennium. The import of rope, twine and other jute goods also fluctuated in these periods. There was a 0.23 percent rate of decline in the imports of rope and twine, and a 9.53 percent fall in that of other jute goods over the period. For the aggregate imports, the value was Rs.160,470 in 1885-86 but Rs.114,090 in 1889-90. This clearly indicates that Bengal's market had totally declined for Dundee products.

Table 4.13: Import of jute articles from Dundee to Bengal, 1885-89

Year	Bag		Cloth		Rope and twine		Others		Total value (Rs.)
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
	(no)	(Rs.)	(yard)	(Rs.)	(cwt)	(Rs.)	(cwt)	(Rs.)	
1885-86	43,080	14,800	487,447	120,520	423	15,490	258	9,660	160,470
1886-87	10,022	3,240	235,785	67,650	544	14,040	54	3,230	88,160
1887-88	437,606	75,750	498,290	124,990	409	12,730	192	4,530	218,000
1888-89	50	20	344,989	89,790	446	14,140	152	6,950	110,900
1889-90	0	0	352,551	92,300	428	14,430	135	7,360	114,090

Source: Moral and material progress, 1890-91, vol.58, p. 200

Bengal mills, on the other hand, continued their strides in the British market during the second half of the 1880s. Table 4.14 shows that the export of bags increased from 7.25 million in 1885-86 to 21.59 million in 1889-90 in quantity, and from Rs. 1.24 million to 5.07 million in the same years in value, signifying annual growth rates of 49.44 per cent and 77.22 per cent, respectively. Likewise, the export of cloth was amounted to 5.12 million yards and 10.63 million yards in quantity, and Rs. 0.40 million and Rs. 1.07 million in value, in the respective years, with the annual rates of growth at 26.90 per cent and 41.88 per cent, respectively. The aggregate value of Bengal's export to the UK achieved a 72.40 per cent rate of growth through an increment from Rs. 1.64 million to 6.39 million during 1885/86-1889/90.

Table 4.14: Value and quantity of export jute manufactured from Bengal to the UK

Year	Bag		Cloth		Others		Total value (Rs.)
	Quantity (no)	Value (Rs.)	Quantity (yard)	Value (Rs.)	Quantity (cwt)	Value (Rs.)	
1885-86	7,248,329	1,240,390	5,118,193	401,190	865	3,230	1,644,810
1886-87	7,235,393	1,431,890	2,179,066	156,940	335	1,620	1,590,450
1887-88	2,977,925	558,050	789,754	77,530	2,210	11,950	647,530
1888-89	14,731,529	3,524,400	4,328,440	425,240	2,825	28,820	3,978,460
1889-90	21,591,413	5,073,410	10,628,379	1,073,120	16,918	239,480	6,386,010

Source: Moral and material progress, 1890-91, vol.58, p. 200

When Bengal mills could defeat their Dundee counterpart, there was no question of their looking back again for them. Table 4.5 shows that both in their domestic and foreign markets they marched ahead. Their sale of bags increased from 21,640,648 in 1875-76 to 49,841,506 in 1890-91 in the domestic market and from 17,554,904 to 95,507,129 in foreign markets in the respective years. The underlying growth rates in these respective series were 8.69 per cent and 29.60 per cent. By the beginning of the 1890s Bengal thus became the leader of global jute industry.

IV

It thus appears that the industry witnessed a slow, modest growth in the initial years. But because of its organisation, the industry under the managing agency system enjoyed benefits such as a) that adequate funds could be mobilised smoothly, b) that the overhead cost was minimised because of scope of economics, c) that there were substantial economics of scale. The industry also enjoyed cost advantages because of i) the abundance of land and water in this province, ii) lower transportation cost, and iii) easy availability of coal from the nearby Asansol-Raniganj coal field.

Although Bengal's traditional jute industry dominated the market over its modern counterpart, with their respective ratio at 59.54

percent: 40.46 percent in 1869-70, the scenario was reversed thereafter. In 1870-71 Bengal mill's came to occupy 50.42 percent of aggregate export outside the province, and it increased to 95.84 percent in 1890-91. Destination-wise, however, we have found that India's domestic parts occupied the lion's share of Bengal's jute-product market till 1878-79. The four ports, namely Bombay, Madras, Rangoon and Akyab, took the bulk consignments from Bengal during 1863-72. The foreign ports came into dominance thereafter. The shares of markets between foreign and domestic ports were in the ratio of 69:31 in 1878-79 but 67:33 in 1884-85. It further rose to 64:33 in 1890-91. The course of market penetration by Bengal mills were as follows: They first captured India's domestic market from the traditional industry, and then proceeded to the markets lying in the Far East before finally entering other continents. In the markets of the Far East and other continents Bengal mills encountered competition mainly from Dundee mills that had earlier captured those markets from Bengal's traditional industries to a good extent. Bengal mills defeated their counterparts of Dundee not only in the latter's foreign markets but also their domestic markets. During 1871/72-84/85 the total export of bags was 16,619,478 ton from Bengal as against 3,211,435 ton from Dundee to Bengal. As a result, Dundee mills were forced into a phase of decline around the concluding decade of nineteenth century.

Annexure 4.1: The quantity of export of bags from Bengal to different foreign ports during 1873-1890
(in number)

Year	United Kingdom	United states	Egypt	China	Australia and New Zealand	Strait Settlement	Ceylon	Cape of Good Hope	Other countries*	Total
1873-74	8,8135	1,898,500	122,300	199,900	1,650,655	1,568,788	437,240	113,300	461,249	6,540,067
1874-75	37,546	332,100	78,500	631,110	1,378,775	4,393,169	686,650	18,500	67,167	7,623,517
1875-76	823,179	2,962,747	1,300,339	941,015	5,742,910	5,661,990	856,995	36,500	480,047	18,805,722
1876-77	1,874,893	12,768,079	1,169,649	5,331,723	6,984,210	3,303,225	496,900	29,912	609,670	32,568,261
1877-78	496,496	4,695,800	1,707,944	2,104,628	8,589,122	6,364,838	317,704	144,642	732,795	25,153,969
1878-79	7,107,141	11,002,524	1,507,101	7,482,731	8,501,290	6,090,249	196,707	492,887	1,521,629	43,902,259
1879-80	4,584,181	10,340,350	2,086,676	13,419,868	12,266,990	9,247,123	178,028	692,850	2,059,188	54,875,254
1880-81	4,57,808	19,150,818	1,256,625	8,706,275	9,637,446	5,608,921	154,500	981,319	2,382,137	47,878,041
1881-82	106,520	6,099,500	360,400	9,948,610	16,438,134	6,399,812	118,392	719,050	1,124,682	41,315,100
1882-83	819,450	10,744,600	482,970	13,444,150	21,867,802	8,871,404	103,506	629,250	2,360,441	59,323,573
1883-84	2,309,618	18,002,311	1,230,407	14,669,343	12,543,178	8,835,805	468,900	1,190,078	5,113,263	64,362,903
1884-85	7,006,000	23,003,830	2,268,707	6,677,010	18,303,700	17,572,077	758,455	737,378	5,682,447	82,009,604
1885-86	7,240,829	16,871,825	2,965,995	4,536,799	15,426,964	7,480,061	264,250	1,469,333	5,928,575	62,184,631
1886-87	7,235,393	18,301,280	2,074,990	9,847,732	10,261,912	6,685,425	329,650	1,058,037	8,082,144	63,876,563
1887-88	2,570,525	15,310,163	870,124	8,701,293	22,235,979	12,968,083	250,773	1,627,071	8,445,604	72,979,615
1888-89	14,731,279	13,096,100	1,761,057	14,779,140	21,211,662	13,238,327	279,900	2,665,400	15,143,758	96,906,623
1889-90	21,591,408	6,133,100	2,010,100	10,722,950	21,027,153	11,077,648	452,000	2,736,100	19,562,790	95,313,249
Average	4,913,912	11,218,449	1,367,876	7,773,193	12,592,228	7,962,761	373,562	902,447	4,691,623	

*Austria, France, Italy, Malta, Russia, Turkey, Mauritius, Aden, South America, Natal, Japan, Java, Maldives, Persian Gulf and others.

Source: Annual statement of the sea-borne trade of Bengal with foreign countries during 1875/76-1889/90.

Annexure 4.2: Export of cloth from Bengal to foreign ports, during
1875-1890 (in yards)

Year	United Kingdom	United States	Others	Total
1875-76	2,250,401	1,750,292	704,758	4,705,451
1876-77	1,397,192	3,347,247	1,264,120	6,008,559
1877-78	151,740	2,500,332	311,997	2,964,069
1878-79	1,823,628	2,259,058	504,135	4,586,821
1879-80	1,039,000	1,682,530	2,489,226	5,210,756
1880-81	170,954	2,564,500	1,484,110	4,219,564
1881-82	1,500	366,200	607,411	975,111
1882-83	400,300	2,150,600	2,054,414	4,605,314
1883-84	948,138	2,879,200	3,069,692	6,897,030
1884-85	3,456,459	10,456,316	1,463,342	15,376,117
1885-86	5,118,193	12,793,610	2,172,785	20,084,588
1886-87	2,179,066	8,793,200	1,778,877	12,751,143
1887-88	789,754	10,469,100	2,321,972	13,580,826
1888-89	4,328,400	7,492,176	3,197,595	15,018,171
1889-90	10,628,379	19,721,200	6,585,955	36,935,534

Source: Annual statement of the sea-borne trade of Bengal with foreign countries during 1875/76-1889/90.

Chapter V

Modern Jute Mills in Bengal:

Drive to Maturity during 1890-1914

In the previous chapter, it has been discussed how the modern jute industry suffered in Bengal from teething problems in the initial decades, and also the story of its market victory by the close of the 1880s in a triangular competition from the domestic traditional jute industry and Dundee's modern jute mills. The period from the early 1890s through the outbreak of the World War I was a phase of its development towards maturity. In this period it grew rapidly in every respect, continuing its march towards newer markets and newer product-mix. This chapter seeks to analyse this phase of the industry's development from three viewpoints. First, we describe the industry's growth during this period in terms of the number of firms, their capacity creation in respect of looms and spindles, as well as the levels of investment and employment. These form the subject-matter of Section I. Secondly, we seek to analyse in Section II the growth of its market, both in India and abroad, as also the changes in the product profile of the industry. The industry's development in this phase was, however, carefully nurtured by Indian Jute Mills Association (IJMA). Apart from acting as a pressure group for streamlining various government policies, it played the role of a cartel where the mills' representatives sat together to put voluntary restrictions on their own working hours so as to acquire monopoly power in the

output market and monopsony power in the market of raw jute. Section III outlines these stories. Section IV, however, sums up the major findings.

I

The modern jute industry had already achieved phenomenal progress in Bengal by the beginning of the 1890s. In 1889-90 there were only 24 jute mills in this province with an aggregate capacity of 8,104 looms and 158,326 spindles (vide Table 5.1). Since their paid-up capital was aggregated to Rs. 30.22 million, each firm was built up on average with a nominal capital of Rs. 1.12 million. This surely speaks of a very large-scale size of contemporary firms in the industry.

Table 5.1: Growth of modern jute mills in Bengal, 1889-1914

Particulars	1889	1890-94	1895-99	1900-04	1905-09	1910-14
Jute mills	27	28	32	37	49	61
Nominal capital(Rs.)	30,215,000	33,703,160	46,353,400	43,070,800	59,895,000	77,876,625
Spindles	158,326	182,696	264,255	357,366	561,769	713,229
Looms	8,104	9,103	12,874	17,409	26,489	34,088
Average daily employment	60,630	68,140	92,876	120,406	180,866	218,596
Capital per mill	1,119,074	1,220,276	1,464,776	1,158,128	1,346,604	1,267,197
Spindle per mill	5,864	6,613	8,342	9,594	11,526	11,614
Looms per mill	300	329	407	467	547	555
Capital/labour	498	499	497	358	360	359

Source: a) For 1889-05 are from Statistical Abstract for British India, various issues, b) for 1905-14 from Annual Reports of the I.J.M.A, various issues and 'Government Administrative Report', various issues.

We have taken five years average for 1890-1914.

A steady-state growth was evident since then. One new mill was set up during 1890-94, four mills during 1895-1899, and five mills during 1900-04. The following quinquennia witnessed further acceleration in the growth rate with as many as 12 new mills coming up during 1905-09 and during 1910-14. The industry thus housed 34 new mills during 1889-

1914, undergoing an average growth rate of 6.07 per cent per annum over a period of a quarter of century. This was indeed a remarkably high rate of growth that gave rise to an aggregate of 68 large-scale jute mills in this province by the end of our study period.

Entry of new firms, also as the expansion and diversification of existing ones, obviously extended the industry's base of capital. From Rs. 30.22 million in 1889 the paid-up capital of the industry is seen to have increased to Rs. 33.70 million in 1890-94, Rs. 46.35 million in 1895-99, Rs. 43.07 million in 1900-04, Rs. 59.90 million in 1905-09 and finally to Rs. 77.88 million in 1910-14. The annual growth rate in this series has been worked out at 7.35 per cent on the average for the period 1889-1914. The accretion of the nominal capital was reflected in its productive capacity, both spindles and looms. The number of spindles that had been 88,000 during 1879-84 rose to 158,326 in 1889-90, 317,348 in 1900-01, 633,120 in 1910-11 and further to 789,236 in 1914-15, showing an annual growth rate of 15.94 percent (see Annexure 5.1). Since there is a technical relation between the number of spindles and the number of looms, the latter also grew at about the same rate, namely 14.53 per cent per annum, during that period. In absolute number, the number of looms increased from 5,500 during 1879-84 to 8,104 in 1889-90, 15,340 in 1900-01, 31,755 in 1910-11 and further to 37,541 in 1914-15 (see Annexure 5.1).

That the industry's growth in this period crucially hinged on the expansion of existing mills is learnt from Table 5.2. It shows that out of

13 mills existing in 1878-79, five mills expanded their loom capacity by more than 100 per cent by 1897, and another five mills by 75-99 per cent. Among the comparatively newer ones, two firms also increased the capacity by more than 100 per cent. In this respect, mention should specially be made of the Shibpur Jute Mills, the Gouripur Jute Mills, the Titagarh Jute Mills and the Hastings Jute Mills, where the capacity expansion was in the order of about 240 per cent, 197 per cent, 172 per cent and 161 per cent. These statistics underscore a state of prosperity for Bengal's modern jute sector.

Table 5.2: Number of looms in Calcutta jute mill during 1878-1897

Name of the mill	1878	1889	1890	1891	1892	1893	1894	1895	1896	1897
Chamdany	358	358	358	358	358	358	430	430	430	480
Wellington	260	260	260	260	260	260	276	277	277	277
Howrah	275	500	500	500	500	500	551	646	646	646
Shamnagar	313	458	458	458	458	458	560	560	560	560
Hastings	200	515	515	515	515	515	521	521	521	522
Baranagar	516	769	769	769	769	769	799	809	944	1023
Clive	150	150	150	150	150	150	162	162	272	272
Shibpur	250	300	300	300	300	300	500	500	735	850
Ganges	300	403	403	403	403	403	413	413	550	550
India	200	300	300	300	300	300	300	300	300	354
Gouripur	224	286	286	286	286	286	415	415	415	665
Fort Gloster	252	253	253	253	253	253	397	397	500	500
Budge Budge	320	460	460	460	460	460	460	460	762	780
Titagarh	-----	260	260	260	260	260	400	435	600	707
Victoria	-----	168	168	168	168	168	340	374	374	374
Kamarhati	-----	320	320	320	320	320	320	459	459	508
Kankinara	-----	310	310	310	310	310	420	420	420	436
Union	-----	350	350	350	350	350	351	375	375	390
Hoogly	-----	----	----	-----	-----	-----	815	815	815	829
Gorden	-----	----	-----	-----	-----	-----	-----	1848	1848	1280
Anglo-Indian	-----	----	----	-----	-----	-----	-----	----	352	352
Alliance	----	----	-----	----	-----	-----	-----	-----	300	320
Standard	-----	-----	-----	-----	-----	-----	-----	----	240	240
Khardah	-----	-----	-----	-----	-----	-----	-----	----	300	300

Source: Report for 1878-79 is from Government Administrative Report and Report for 1889-97 are from Indian Jute Manufactures Association.

N.B: (---) represents year when mill did not come up

Returning back to Annexure 5.1 we find that in terms of nominal capital the mills' average size remained virtually stagnant between the period 1879-84 and 1914-15, notably at Rs. 1.28 million, although fluctuations occurred in between. The average size increased to Rs. 1.42 million during 1884-89 but reduced to Rs. 1.16 million in 1891-92. It rose slowly thereafter to Rs. 1.57 million in 1899-1900 with a falling trend coming to prevail upon since then. Two additional aspects should be emphasized to this end. First, although the average firm size remained virtually stagnant between the early 1880s and 1914-15 with alternative upward and downward trends through 1899-1900 and thereafter, the loom and spindle capacities of the mills underwent a secular rise. From 262 during 1879-84 the number of looms rose to 300 in 1889-90, 425 in 1899-1900, 548 in 1910-11 and further to 560 in 1914-15. In corresponding years, the number of spindles increased from 4,190 to 5,864, 8,885, 10,916 and 11,780 respectively. This signifies that the industry grew in such a way that while more investment was made towards the installation of looms and spindles, other investments (such as those on land and land development, buildings etc.) were economised so that total investment per mill remained virtually static. Such a practice reflected an effort on the part of the firms to undertake more labour-intensive production, especially from the fag-end of the nineteenth century. The static (or falling) capital per mill in the phase of a rising production certainly indicates rising intensity of labour in technology. The number of looms and spindles could not, however, be economised greatly since more employment of workers required a greater provision for

looms and spindles. Indeed, rising labour intensity is the second aspect of the industry that Table 5.1 highlights. Although the amount of capital per mill remained virtually static in our study period, the number of average daily employment per mill increased steadily. It rose to 60,630 in 1889, from 68,140 to 92,876 during 1890-99, from 120,406 to 180,866 during 1900-09 and further to 218,596 during 1910-14. More precisely, Column 10 of Table 5.1 shows that the industry's capital-labour ratio decreased steadily during the period under study. It was Rs. 698 per worker during 1879-84 but Rs. 648 per worker during 1884-89, Rs. 499 per worker during 1890-94, Rs. 358 per worker during 1900-04 and Rs.359 per worker during 1910-14. Thus, compared to 1884-85, the labour intensity was increased by 51.86 per cent in 1910-11. Chapter VI will seek to explain the rising trend of labour-intensity in Bengal's modern jute sector during the study period.

II

Bengal's jute mills manufactured three broad categories of products, namely raw jute, gunny bags and cloth. Of them raw jute was certainly primitive. From the early days of Dundee mills, Bengal used to export this product to Great Britain, and the export was later diversified to many countries in the Continent, as also in North America, when the modern jute industry took its root in those countries. The technical activity in this process involved simply packaging, rather than

manufacturing¹. Drawing supplies of jute fibres from agriculture, a number of jute presses, as we have seen, came up in and around Calcutta to hydraulically press and screw them in the form of bales. The second important item in the product-mix was the gunny bags which the Calcutta mills manufactured from their beginning. In view of the extensive market for bags that Dundee mills had created globally, Bengal mills got a ready market for it from their beginning. The production of cloth was, however, insignificant at the outset but it picked up later on. The product-mix of Bengal jute industry and its change in the latter part of our study period is shown in Table 5.3.

Table 5.3 Product-mix of Bengal jute industry during 1892-1914
(Annual average)

Year	Raw jute (bales)	Bag (million pieces)	Hessian cloth (million yards)
1892-96	2,771,058	182.02	92.73
1897-1901	3,069,174	243.10	303.65
1902-06	3,475,629	281.48	570.03
1907-11	3,853,496	392.31	869.57
1912-14*	4,015,229	410.90	1034.34

Source: I.J.M.A, Statement VII., various years

N.B. * The average for 1912-14 for three years.

A significant change is thus found to have taken place in the product-mix during 1892-1914. Though all product series increased during the period, different rates of growth prevailed therein so that their respective importances in the product-mix were changed. The table shows that the export of raw jute increased from 2.77 million bales per annum during 1892-6 to 3.48 million bales per annum during 1902-06, and further to 4.01 million bales per annum during 1912-14. In the corresponding periods, the increments were from 182.02 million pieces to

¹ Wallace, Romance of jute, p. 5

281.48 million pieces and further to 410.90 million pieces respectively for gunny bags, and from 92.73 million yards to 570.03 million yards, and further to 1.03 billion yards respectively for cloth. These series thus underwent the average annual growth rates of 2.03 per cent, 5.72 per cent and 46.16 per cent respectively. In the absolute terms, these growth performances appear more impressive. Compared to the period of 1892-96, the market of raw jute expanded by about two and a half times by the close of our study period, that of gunny bags by more than three times, and that of cloths by more than twelve times. Slower growth rate in the export of raw jute could indeed be explained by the rapid development of the jute industry in Bengal, which certainly increased the domestic absorption of raw jute, and accordingly left lesser amount as exportable surplus². Between the finished products of bags and cloths, however, the market for the latter expanded faster³. Presumably this was due to the fact that the industry explored the bag market in the beginning, whereas its entry into the cloth market was a later development⁴. Bengal exported hessian cloths only by Rs. 3,914,806 in the early 1890s as against an export worth of Rs. 23,192,555 for gunny bags. The low initial value for this series of hessians might explain the high rate of its growth. After achieving a rate of 45.59 per cent during 1892/6-1897/1901 its annual growth decelerated to 17.55 per cent, 10.51 per cent and 4.73 per cent respectively in the following periods. Because of these asymmetric growth

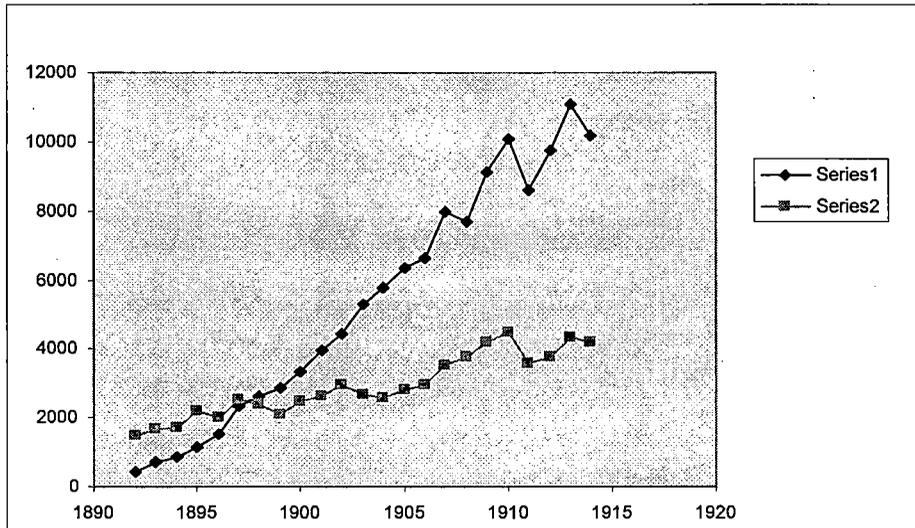
² The Govt. administrative report stated that the total exports of raw jute decreased by 16% in 1893-94, p.164 and by 33.6% in 1898-99, p.158

³ The administrative report in 1900-01 also noticed the remarkable increase in the exports of cloth. It pointed out that volume of this trade having more than doubled in five years. P. 118

⁴ Annual Administrative report (1875-76), p.203

rates in different series, hessian cloths gained much importance in the product-mix whereas gunny bags were relegated behind. Unequal growth performances of hessian cloth and gunny bags are demonstrated in Figure 5.1.

Figure 5.1 Export of hessian cloth and gunny bags from Bengal during 1892-1914



To get precise ideas about the relative growth rates of these exports we estimate the time trends of cloths and bags during 1892-1914. Table 5.4 reports the results.

Table 5.4: Estimated Year-Quantity Relationships and Their Relevant Statistics

No	Regression Equation	R ²	F (sig. level)	DW
1	$Y^{\text{hessian}} = -960,000 + 507.273t$ (S.E=30779) (S.E=16.174) t= -31.183 t=31.363 (0.0001) (0.0001)	0.979	983.634 (.0001)	1.811
2	$Y^{\text{bag}} = -237497 + 126.338t$ (S.E=17971) (S.E=9.444) t= -13.215 t=13.378 (0.0001) (0.0001)	0.895	178.967 (.0001)	1.358

The trend co-efficient is highly significant for both the estimations, that is, 0.0001, and also, their slope coefficients are positive. Given that

the series for hessian has a mean value at 5340.405 lakhs and that for gunny bags at 2924.857 lakhs, the estimated slopes indicate an annual growth rate of 9.50 percent for cloths and 4.39 percent for bags, relative to their respective mean values. The former thus underwent twice a higher rate of growth than what the latter achieved.

There were remarkable changes in the market composition also. Table 5.5 reveals such changes between the domestic and foreign markets for gunny bags.

Table 5.5: Market destinations of various jute bags from Bengal, 1904-14 (in percentage)

Year	Foreign port	Indian port	Local consumption	Grand total
1904	83.55	13.81	2.64	100
1905	86.40	11.85	1.75	100
1906	88.96	10.19	0.85	100
1907	88.32	10.93	0.75	100
1908	89.07	10.49	0.44	100
1909	89.93	9.22	0.85	100
1910	89.21	9.77	1.02	100
1911	88.58	9.84	1.58	100
1912	88.31	10.09	1.60	100
1913	90.59	8.54	0.87	100
1914	91.94	7.33	0.73	100

Source: Estimated from I.J.M.A, Statement XI, various years.

It is clear that the foreign outlets heavily dominated the market. Out of their total sale of about 852 million pieces in 1904 (vide Annexure 5.2) the foreign markets took as much as 83.55per cent while only 13.81per cent of it went to domestic markets. The rest 2.64 percent was consumed locally in Bengal⁵. Even this lion's share of foreign ports was further increased in the years to follow, marginalising both the local

⁵ For the detail of the total market, see Report of the marketing of jute products, p. 5

market and other domestic markets in the country. The table shows that foreign markets share increased to 89.21 per cent in 1910 and further to 91.94 per cent in 1914 while the share of domestic markets (excluding that in Bengal) was reduced to 9.77 per cent and further to 7.33 per cent in corresponding years, and the share of local consumption to 1.02 per cent and 0.73 per cent respectively. The industry's gunny bag division had thus become almost exclusively export-oriented by the close of our study period.

Table 5.6: Distribution of hessian cloths between foreign and domestic market

Year	Foreign outlets	Domestic outlets	Total
1905	97.81	2.19	100
1906	97.52	2.48	100
1907	97.97	2.03	100
1908	98.00	2.00	100
1909	98.30	1.70	100
1910	96.96	3.04	100
1911	97.18	2.82	100
1912	98.49	1.51	100
1913	98.24	1.76	100
1914	97.40	2.60	100

Source: Estimated from I.J.M.A, statement VII, and statement XII, various years.

Still more export-orientation took place in the cloth division. The aggregate sale value of this product increased steadily from Rs. 62.98 million in 1905 to Rs. 83.43 million in 1911 (vide Annexure 5.5). It then jumped up to Rs. 130.52 million in 1912 and further to Rs. 155.83 million in 1913, showing moderate correction thereafter. Much of these rises were thanks to foreign buyers who absorbed more than 96 per cent of Bengal's hessian cloths during 1905-14 (vide Table 5.6). In certain years – such as 1909, 1912 and 1913 – their share crossed the bound of

98 per cent. In fact, the steep upswing in the series since 1912 was also due to higher foreign in-takes.

Since market destinations outside the country underwent rapid changes for both bags and cloths during 1890-1914, we divide the requisite series in two sub-periods, 1890-1904 and 1904-14, and present them in different tables. The respective series are reported in Tables 5.7 and 5.8 for gunny bags, and in Tables 5.10 and 5.11 for hessian cloths. From the former set of tables we gather that the sale of gunny bags abroad rose from 106.35 million pieces in 1890-1 to 197.36 million pieces in 1903-04 and further to 1.25 billion pieces in 1914. The underlying rate of growth is worked out at 45.09 per cent per annum for about a quarter of a century. This was certainly very impressive. Much of these progresses took place at the debut of the twentieth century. As against a meagre rate of 5.66 per cent per annum in the closing decade of the previous century, the annual rate of growth was 46.77 per cent per annum during 1900-14.

The structure of bag market abroad, as it appears in Table 5.7, was dominated by Australia, the United Kingdom, Strait Settlements and the United States of America in order. While they jointly accounted for about 60 per cent on average during 1890-1904, their individual shares were 18.39 per cent, 15.95 per cent, 12.57 per cent, and 12.55 per cent, respectively. Among other buyers, we should speak of China, South America, Egypt and Germany cutting market shares at 7.21 per cent, 5.68 per cent, 4.21 per cent, and 3.20 per cent, respectively. Also, Cape colonies and Turkey shared this market by about 2.50 per cent during 1890-1904. On the whole, as many as ten countries used to regularly purchase gunny bags from Bengal during this period.

Table 5.7: Export of bags from Bengal to foreign countries during 1890-1905

(in number)

year	United Kingdom	Egypt	United States	China	Strait Settlement	Australia	Germany	Cape Colony	South America	Turkey	Other countries	Total
1890-91	19,540,052	2,709,500	13,442,400	7,288,850	12,384,968	22,889,117	972,340	1,916,850	5,111,600	1,735,650	18,358,042	106,349,369
1891-92	14,461,500	4,317,775	19,513,106	10,103,185	13,871,700	18,772,515	1,327,100	3,529,890	6,671,700	22,549,750	22,768,444	137,886,665
1892-93	21,727,780	4,958,020	19,213,800	12,323,050	15,795,864	23,826,306	1,919,250	4,226,075	8,228,950	1,939,700	23,769,575	137,928,370
1893-94	21,373,044	6,646,550	24,538,500	9,375,750	19,929,540	20,097,685	1,546,506	4,763,150	9,638,775	2,921,725	27,159,506	147,990,731
1894-95	27,950,790	4,495,300	25,881,800	6,481,400	15,611,940	27,958,900	2,366,400	3,770,950	12,053,650	2,260,850	31,987,040	160,819,020
1895-96	23,881,650	5,336,750	30,821,460	13,801,725	21,884,072	24,377,080	4,786,050	7,227,513	14,634,200	366,630	14,544,567	161,661,697
1896-97	27,885,157	7,658,700	22,910,400	8,987,650	20,229,750	21,852,174	8,467,650	5,953,900	15,050,850	3,856,985	20,451,025	163,304,241
1897-98	39,370,445	7,281,550	39,004,800	1,0062,600	16,008,450	30,336,450	1,2838,550	4,852,450	11,689,750	3,323,550	21,214,280	195,982,875
1898-99	38,448,995	8,874,750	23,793,050	4,216,000	24,231,100	31,724,685	6,852,175	3,136,500	1,5273,218	3,015,454	19,712,443	179,278,370
1899-1900	32,101,030	5,697,750	15,075,400	9,279,500	21,336,786	35,795,315	2,786,538	5,074,450	1,8675,250	1,804,350	18,572,012	166,198,381
1900-01	32,666,710	7,740,750	13,069,950	1,601,400	31,380,100	42,789,827	5,979,450	3,930,350	3,950,300	1,459,200	17,793,587	132,961,624
1901-02	28,677,216	8,102,850	25,322,600	24,061,000	23,730,770	48,447,580	9,806,200	3,931,500	5,335,000	2,807,400	18,573,587	198,795,703
1902-03	34,759,200	9,096,050	13,580,500	26,287,400	33,208,650	29,739,355	1,0315,850	5,702,600	4,447,700	3,937,650	24,621,748	195,696,703
1903-04	30,108,860	9,925,236	7,816,300	18,343,600	17,671,550	38,903,864	4,245,500	2,719,390	4,953,200	2,842,733	59,828,015	197,358,248
1904-05	24,454,702	9,729,850	11,339,300	13,106,600	18,599,550	29,806,450	3,600,600	3,796,600	2,472,800	1,874,380	30,483,753	149,264,585
Average	25,867,142 (15.95%)	6,838,092 (4.21%)	20,354,891 (12.55%)	11,687,981 (7.21%)	20,391,653 (12.57%)	29,821,154 (18.39%)	5,187,343 (3.20%)	4,302,144 (2.65%)	9,212,462 (5.68%)	3,779,733 (2.33%)	24,239,562 (14.95%)	162,098,438

Source: Annual statement of the sea-borne trade and navigation of Bengal presidency with foreign countries and Indian ports, 1894-95, 1899-1900 and 1904-05, Vol-1

N.B. *The figure within the braked is indicated the relative share.

Table 5.8: Exports of power loom bags from Bengal to different foreign countries during 1904-1914 (in number)

Year	United States	U.K	Australia	Strait Settlement	Egypt & Levant	China	West Indices	New Zealand	Cape & Mauritius	Japan	Grand total
1904	558,319,800 (78.46%)	39,735,600 (5.58%)	21,711,900 (3.05%)	24,252,200 (3.40%)	16,013,400 (2.25%)	17,858,800 (2.50%)		7,399,600 (1.03%)	5,684,100 (0.79%)	1,314,400 (0.18%)	711,553,700
1905	578,302,900 (76.71%)	40,859,100 (5.42%)	38,650,400 (5.12%)	27,805,700 (3.68%)	19,177,700 (2.54%)	19,244,200 (2.55%)	11,760,000 (1.56%)	5,645,300 (0.74%)	11,394,500 (1.51%)	997,500 (0.13%)	753,837,300
1906	623,882,600 (73.55%)	81,753,600 (9.63%)	42,856,600 (5.05%)	30,332,600 (3.57%)	22,502,800 (2.65%)	13,080,900 (1.54%)	13,868,200 (1.63%)	6,152,500 (0.72%)	12,610,200 (1.48%)	1,117,700 (0.13%)	848,157,700
1907	742,460,900 (74.99%)	87,944,500 (8.88%)	46,618,500 (4.70%)	33,617,400 (3.39%)	23,000,600 (2.32%)	23,251,200 (2.34%)	12,226,200 (1.23%)	6,615,100 (0.66%)	13,609,100 (1.37%)	657,500 (0.06%)	990,001,000
1908	715,903,400 (73.69%)	78,954,400 (8.12%)	51,274,400 (5.27%)	33,719,200 (3.47%)	27,796,500 (2.86%)	25,364,100 (2.61%)	12,061,700 (1.24%)	8,453,800 (0.87%)	16,461,000 (1.69%)	1,482,200 (0.15%)	971,470,700
1909	837,211,700 (73.73%)	74,819,200 (6.58%)	68,014,400 (5.98%)	29,870,300 (2.63%)	26,641,600 (2.34%)	42,807,600 (3.77%)	17,226,600 (1.51%)	12,463,100 (1.09%)	20,650,000 (1.81%)	5,774,100 (0.50%)	1,135,478,600
1910	906,796,900 (73.50%)	89,074,900 (7.22%)	88,291,800 (7.15%)	38,658,500 (3.13%)	27,601,500 (2.23%)	30,200,800 (2.44%)	15,767,000 (1.27%)	10,727,000 (0.86%)	23,519,700 (1.90%)	2,969,300 (0.24%)	1,233,607,400
1911	767,392,000 (74.03%)	88,194,000 (8.50%)	58,058,200 (5.60%)	26,310,600 (2.53%)	27,637,900 (2.66%)	28,235,200 (2.72%)	10,799,500 (1.04%)	9,215,800 (0.88%)	19,430,000 (1.87%)	1,276,100 (0.12%)	1,036,543,300
1912	888,138,100 (76.88%)	77,753,200 (6.73%)	55,700,800 (4.82%)	32,889,000 (2.84%)	24,525,600 (2.12%)	32,366,900 (2.80%)	12,462,900 (1.07%)	9,964,300 (0.86%)	20,730,200 (1.79%)	606,000 (0.05%)	1,155,137,000
1913	996,133,400 (75.24%)	86,545,500 (6.53%)	82,583,000 (6.23%)	47,016,400 (3.55%)	25,883,800 (1.95%)	37,173,300 (2.80%)	17,095,500 (1.29%)	9,855,400 (0.74%)	20,749,400 (1.56%)	796,200 (0.06%)	1,323,831,900
1914	922,762,700 (73.64%)	89,611,300 (7.15%)	75,738,400 (6.04%)	41,404,900 (3.30%)	23,621,800 (1.88%)	47,687,200 (3.80%)	14,042,400 (1.12%)	11,348,400 (0.90%)	22,831,500 (1.82%)	3,999,400 (0.31%)	1,253,048,000
Average	776,118,582 (61.93%)	83,850,067 (6.69%)	57,227,127 (4.56%)	33,261,527 (2.65%)	24,036,655 (1.91%)	28,842,745 (2.30%)	13,731,000 (1.09%)	8,894,573 (0.70%)	17,060,882 (1.36%)	1,908,218 (0.15%)	1,253,048,000

Source: I.J.M.A, Statement XI, various years. N.B. *The figure within the braked is indicated the relative share of the total quantity in each year

The following period, however, witnessed market consolidations in two respects. Firstly, there were concentrations of sale in a few markets. While, in the previous period, four major markets accounted for 60 per cent of Bengal's foreign exports of bags, such markets now shared more than 90 per cent during 1904-14. Secondly, market importance had also been significantly altered in the later period. While Australia had previously been at the top of importance, it was now relegated to the third position with a share of only 5.51 per cent, and the US market became the primary destination that absorbed as much as 75 per cent of Bengal's bag consignments abroad. The UK, however, retained its second position and Strait Settlements were slightly downgraded to the fourth position. On average, their market shares are worked out at 6.97 per cent and 3.80 per cent respectively.

Table 5.8 also enables us to comprehend the growth dynamics in individual markets. While, in the absolute term, all the markets grew up during 1904-14, the United States of America took a definite lead⁶. The US in-take is seen to have rose from about 558 million in 1904 to 837 million in 1909 and further to 923 million in 1914, signifying a 6.58 per cent annual rate of growth over the decade. Almost similar rate of annual growth, notably 6.92 per cent, prevailed in the market of Straight Settlements also, where the volume of sale went up from about 24 million in 1904 to 30 million in 1909 and further to 41 million in 1914. The British and Australian markets, however, grew at faster

⁶ The quantities shipped being the highest on record in 1901-2 as referred in the administrative report, 1901-02, p.246

rates in this period⁷. The annual rate of growth was 12.55 per cent in the former (from about 40 million in 1904 to 75 million in 1909 and further to 90 million in 1914) and 24.85 per cent in the latter (from about 22 million in 1904 to 68 million in 1909 and further to 76 million in 1914). Because of these asymmetric growth performances, the market shares of the USA and Straight Settlements deteriorated to some extent while the UK and Australia excelled. For the former two countries, the market sharing percentage deteriorated from 73.86 per cent to 73.64 per cent and from 3.40 per cent to 3.30 per cent, respectively. In contrast, the share of the UK increased from 5.58 per cent to 7.15 per cent and that of Australia from 3.05 per cent to 6.04 per cent in the same duration. A regular sale also took place in Egypt and Levant, China, Japan, West Indies, New Zealand, the Cape of Good Hope and Mauritius, and their absolute in-takes surged contemporaneously. But these were overshadowed by better market performances in totality, and their individual market shares remained virtually stagnant. It was above two per cent for China, and Egypt and Levant taken together, above one per cent for West Indies and less than one per cent for other countries.

⁷ The striking features of the trade in jute manufacturing was the large expansion in exports to South America as stated in the administrative report, 1903-04, p. 80

Table 5.9: Exports of Bengal gunny bags to different Indian ports, 1904-1914
(in '000 pieces)

Year	Bombay	Madras	Karachi	Ceylon	Other Indian ports	Burma & other ports	Local consumption	By rail	Grand Total
1904	28,018 (23.82%)	3,746 (3.18%)	-----	-----	5,488 (4.66%)	32,301 (27.46%)	22,480	25,575	117,608
1905	21,424 (20.72%)	1,604 (1.55%)	4,733 (4.57%)	1,208 (1.16%)	4,954 (4.79%)	34,735 (33.60%)	15,247	19,450	103,356
1906	22,889 (23.54%)	7,859 (8.08%)	6,452 (6.63%)	1,726 (1.77%)	103 (0.10%)	31,419 (32.32%)	8,110	18,650	97,209
1907	30,228 (24.68%)	8,918 (7.28%)	11,725 (9.57%)	2,157 (1.76%)	125 (0.10%)	39,700 (32.41%)	8,368	20,650	122,470
1908	33,174 (29.00%)	13,632 (11.91%)	7,050 (6.16%)	3,415 (2.98%)	311 (0.27%)	38,367 (33.54%)	4,823	13,600	114,372
1909	32,841 (28.20%)	9,584 (8.22%)	8,096 (6.95%)	2,598 (2.23%)	318 (0.27%)	35,671 (30.63%)	10,698	16,650	116,456
1910	44,239 (32.75%)	8,102 (5.99%)	10,565 (7.82%)	2,437 (1.80%)	136 (0.10%)	39,407 (29.17%)	14,039	16,150	135,076
1911	25,336 (21.99%)	7,365 (6.39%)	7,751 (6.73%)	2,619 (2.27%)	234 (0.20%)	33,435 (29.03%)	18,452	19,975	115,167
1912	28,382 (21.65%)	9,400 (7.17%)	7,155 (5.45%)	2,323 (1.77%)	995 (0.75%)	37,692 (28.75%)	20,936	24,200	131,084
1913	28,596 (22.92%)	10,573 (8.76%)	6,052 (4.85%)	2,981 (2.38%)	250 (0.20%)	44,747 (35.86%)	12,761	17,900	124,761
1914	16,733 (16.74%)	5,524 (5.52%)	6,095 (6.09%)	2,665 (2.66%)	64 (0.06%)	40,714 (40.74%)	9,965 (9.97%)	18,175 (18.19%)	99,936

Source: I.J.M.A, Statement XI. various years.

N.B: *the figure within the bracket is indicated the relative shares of the total quantity in each year, (---) indicates an insignificant amount.

Domestic markets for gunny bags were constituted largely of Bombay, Bengal and North Indian states⁸ with lesser contributions of Madras, Karachi and Ceylon (Vide Table 5.9). For the period 1904-14 as a whole, Bombay shared this market by about 24.67 per cent, Bengal by 11.41 per cent and

⁸ Since north Indian states were supplied on railways, transshipments on rails are taken to represent in-takes in north Indian states.

North India by 16.51 per cent. The market share was, however, only 6.75 per cent for Madras, 5.89 per cent for Karachi and 1.88 per cent for Ceylon.

Bengal's export of hessian cloths had also a chequered progress since the early 1890s (vide Tables 5.10 and 5.11). From 29.67 million yards in 1890-1, their exports rose to 306.26 million yards in 1899-1900, 409.11 million yards in 1904-05, and further to 1.06 billion yards in 1913-14. Most interestingly, in this long time-series of quarter of a century, there is not even any significant downward cycle. The rate of growth was, however, spectacularly high for the period 1890/1-1904/05, notably 85.25 per cent per annum. Possibly this was due to a low base value and also for the vast unexplored market where Bengal hessian cloths just began to enter by the 1890s. The rate of market penetration, however, subsided later on, and a 15.84 per cent annual growth rate prevailed for the period 1904/05-1914/15.

We have pointed out elsewhere that Bengal's exports of cloth stood for 1875-76 at Rs. 1.11 million for the USA and at Rs. 0.22 million for the UK. These figures grew respectively to Rs. 10.26 million and Rs. 2.43 million in 1896-97 (vide Annexure 5.4) so that an annual growth rate of 39.25 per cent prevailed in the US market and 47.83 per cent in the British market for more than two decades. Such a high rate of growth in the long-run consolidated the position of Bengal cloths in those markets. Table 5.10, however, shows that the

US market share rose above 75 per cent for the period 1890/1-1904/05⁹. The British market, the second in importance, had a share of about 9.60 per cent during 1890-1905. It should be noted that the latter market expanded rapidly till 1900-01 but a declining trend came to prevail thereafter. The table shows that the export level rose there from 2.27 million yards in 1890-1 to 75.82 million yards in 1900-01 but it was depressed to 20.11 million yards in 1904-05. South America also emerged as an important market place for Bengal jute cloth drawing about 9.54 per cent of the export during 1890-1905. In the Far East, China remained a steady market for this product though high volatility prevailed in its market share. It was around or above five per cent in most of the years. In the Continent, only Germany was the regular buyer but its market share hovered mostly below three per cent.

⁹ The U.S market took larger quantity of cloth, because of the lower tariff rate on cloth as compared with that on bags, Administrative report, 1910-11, p. 74

Table 5.10 Export of jute cloth from Bengal to foreign countries, 1890-1905 (in yards)

Year	United Kingdom	United States	China	South America	Germany	Other Countries	Total
1890-91	2,266,750	22,058,400	-----	-----	-----	5,346,566	29,671,716
1891-92	303,300	32,317,429	-----	-----	-----	4,551,831	37,172,560
1892-93	2,883,600	32,754,180	-----	-----	-----	4,307,067	39,944,847
1893-94	10,684,950	45,704,200	-----	-----	-----	4,192,917	60,582,067
1894-95	15,693,708	80,247,694	-----	-----	-----	7,052,020	102,993,422
1895-96	16,956,900	81,783,876	4,025,900	3,422,000	4,521,500	3,292,062	114,002,238
1896-97	23,826,381	111,603,731	3,779,100	26,574,900	555,800	2,945,897	169,285,809
1897-98	18,676,281	179,118,500	4,804,500	34,046,000	677,700	5,420,720	242,743,701
1898-99	20,414,900	195,657,400	3,985,000	48,484,800	3,590,900	8,113,200	280,246,200
1899-1900	29,242,100	194,539,749	14,122,886	56,801,300	2,111,779	9,445,990	306,263,804
1900-01	75817137	194,017,535	20,686,325	-----	30,374,300	17,880,350	338,775,647
1901-02	52145200	273,308,600	21,482,892	10,000	12,616,000	15,058,066	374,620,758
1902-03	16368400	353,873,300	22,324,600	10,000	736,000	17,711,400	411,023,700
1903-04	14117505	365,481,700	12,585,825	5,000	624,000	17,508,478	410,322,508
1904-05	20112800	352,048,890	14,021,625	-----	2,874,000	20,056,252	409,113,567
Average	21,300,661 (9.60%)	167,634,346 (75.58%)	12,181,865 (5.49%)	21,169,250 (9.54%)	5,868,197 (2.64%)	9,525,521 (4.29%)	221,784,170 (100%)

Source: Annual statement of the sea-borne trade and navigation of Bengal presidency with foreign countries and Indian ports, Vol-1, 1894-95, 1899-1900 and 1904-05,

N.B: (---) indicates an insignificant amount.* The figure within the bracket is indicated the relative average share of the average total quantity during these period.

Table 5.11: Export of jute cloth from Bengal to foreign countries, 1905-1915
(in yards)

Year	United kingdom	United States	Australia	Germany	Other countries	Total
1905-06	3,909,100	419,531,400	14,117,400	3,917,000	441,474,900	658,188,949
1906-07	62,044,580	479,387,950	13,324,160	4,791,000	559,547,630	695,444,582
1907-08	35,986,300	514,167,054	17,049,970	8,478,500	575,681,824	789,545,292
1908-09	23,25,700	499,802,344	18,204,678	4,450,000	524,782,722	769,569,849
1909-10	32,788,618	657,432,703	18,127,741	2,759,000	711,108,062	939,531,920
1910-11	41,647,472	664,273,202	24,746,353	5,221,000	735,888,027	954,318,177
1911-12	45,618,350	595,875,500	21,124,780	9,097,900	671,716,530	870,963,770
1912-13	40,847,225	663,293,316	22,881,749	2,775,400	729,797,690	1,021,475,989
1913-14	50,654,742	735,230,187	27,656,832	7,235,340	820,777,101	1,060,663,637
1914-15	67,715,454	705,999,139	29,797,250	2,448,000	805,959,843	1,056,969,335
Average	38,353,754 (4.35%)	593,499,279 (67.31%)	20,703,091 (2.34%)	5,117,314 (0.58%)	657,673,433 (74.59%)	881,667,150 (100%)

Source: Annual statement of the sea-borne trade and navigation of Bengal presidency with foreign countries and Indian ports, Vol-1, 1909-10 and 1910-11 to 1914-15
N.B.*The figure within the bracket is indicated the relative share.

Two major changes are found to have taken place in later years. First, although the US market retained its distinctive position, followed by the UK, both of these markets lost their respective shares¹⁰. The reduction in the market share was from 75.58 per cent during 1890-1905 to 67.31 per cent during 1905-14 for the former, and from 9.60 per cent to 4.35 per cent in the same duration for the latter. Among other countries, Germany reduced its market share from 2.64 per cent to 0.58 per cent in those periods while the markets in China and South America were reduced to insignificance. Second, Australia emerged as an important buyer for this product, purchasing about 2.34 per cent. Although this country had a regular presence in Bengal's bag market for long, it was conspicuously absent in its cloth market.

¹⁰ The advance was especially marked in case of U.S, Hong Kong, and Australia for the shipment of bags among all the foreign markets, The administrative report, 1882-83, p.294

It thus appears that the US market was the main outlet of Bengal jute mills for both gunny bags and cloths. Of their total export consignments, this market took about 75 per cent of the former and 67 per cent of the latter during 1904-15. Since these were the basic packaging materials for the agricultural and industrial goods alike, the development status of the US economy in the contemporary world explains why it emerged as the single-most important buyer for those products of Bengal.

It should be noted that the domestic markets like Bombay, Madras and Burma were not at all significant for Bengal's jute cloths. In 1884-5, Bengal mills supplied those markets only by Rs. 440,000, Rs. 43,000 and Rs. 11,000, respectively. Although available statistics show that these markets were doubled by 1900-01 in terms of quantity (especially Bombay and Madras; for Burma, there had been a 50 per cent rise), they remained insignificant in terms of values. But the home market of Bengal and its northern states (contemporaneously known as the up-country markets), which were supplied through railways, were quite extensive for both bags and cloths. Table 5.12 reports the extents of these markets during 1905-14. It appears in the table that in 1905 these markets absorbed bags worth of Rs. 16.51 million and cloths worth of Rs. 1.47 million, aggregating to about Rs. 18 million. This was quite significant in view of the fact that in 1905 Bengal exported these products by about Rs.46.64 million and Rs. 35.97 million (vide Annexure 5.3 and 5.4), i.e. Rs. 82.61 million in aggregate. Thus, the home markets in Bengal and its northern states were almost a quarter of the foreign markets for jute products.

What was more, a rapid growth prevailed in these outlets through 1912 whereby the sale proceeds became Rs. 30.55 million for bags and 2.09 million for cloths. These market dynamics signify that economic activities in and around Bengal must have been buoyant in the contemporary period.

Table 5.12: Sales of bags and cloths in Bengal and up-country markets, 1905-14

Year	Gunny bags		jute cloths	
	Number	Value (Rs.)	Number	Value (Rs.)
1905	68,701,777	16,513,532	13,957,803	1,466,158
1906	51,666,350	14,334,992	16,477,588	2,182,892
1907	58,920,830	17,587,297	16,229,094	2,189,200
1908	43,657,566	10,557,694	15,487,994	1,682,908
1909	56,790,696	12,289,248	15,596,967	1,519,219
1910	78,945,448	17,117,417	30,717,087	2,930,697
1911	90,390,164	23,567,417	24,273,697	2,520,222
1912	99,491,551	30,545,945	14,713,907	2,085,545
1913	68,732,494	21,707,077	19,638,310	3,008,432
1914	67,105,896	21,392,166	26,566,740	3,416,188

Source: Annual report of I.J.M.A , Statement XII, various years.

In view of such a rapid penetration of Calcutta mills in the local markets it is only expected that Dundee's jute mills must have lost their markets in Bengal. We report in Table 5.13 the import of bags and cloths from the UK to Bengal during 1880/1-1899/1900.

Table 5.13: Quantity and value of imports of bag and cloth from U.K to Bengal.

Year	Bag		Cloth		Year	Bag		Cloth	
	Piece	Value (Rs.)	Yards	Value (Rs.)		Piece	Value (Rs.)	Yards	Value (Rs.)
1880-1	1,000	100	3,120	411	1893-94	1,762	603	43,510	12,874
1881-2	300	501	531	124	1894-95	209	35	6,418	1,008
1882-3	500	100	21,896	5,180	1895-96	300	60	47,143	8,701
1883-4	1,200	150	48,775	3,070	1896-97	421	124	36,298	7,896
1884-5	1,000	120	3,210	10,232	1897-98	16,762	3,259	151,966	25,802
1890-1	450	91	75,209	14,832	1898-99	14,700	2,396	88,942	14,351
1891-2	-----	-----	1,210	226	1899-1900	300	280	44,031	7,105
1892-3	400	137	31,085	9,506					

Source: Annual statement of the sea-borne trade and navigation of Bengal presidency with foreign countries and Indian ports, 1884-85, 1894-95 and 1899-1900.

N.B: (---) indicates an insignificant amount.

It thus appears that Bengal received only trifling amounts of jute bags and cloths from Dundee at the fag-ends of the nineteenth century. The aggregate import of these products was worth less than Rs. 8,000 in 1899-1900.

III

As an industry belonging to the organised sector, Bengal jute industry gave rise to various cartels in the form of association at different stages of the business. One of its most important associations that greatly influenced the course of the industry's development for a couple of decades to come was the Indian Jute Mills Association (IJMA). It came up around the mid-1880s when the industry had been passing through its toughest phase of development. We have already seen that after a humble beginning through 1870, the industry grew apace with as many as 18 mills coming up during 1871-5 and four more mills in the next decade. As a result, the loom capacity of the industry became more than 5,300 by 1885. Operating at a triangular competition in the contemporary packaging market, it was very difficult for those nascent jute mills to find out profitable vents at full capacity utilisations. Such a market environment expectedly gave rise to keen competition amongst them, often leading to the price war and a serious dent on profitability. The emerging market was surely oligopoly in character, and as a natural tendency in such a market, frequent attempts were made to form informal cartel to abate the ensuing competition. But since deviation from any restrictive practices under such agreements is as

a rule always profitable to an individual firm, violations of agreements at individual ends were routine affairs, which frustrated those thrusts to re-establish fierce competition again. In such circumstances, the jute mill-owners and managing-agents of Calcutta met informally in March 1884 at the behest of Maitland Herriot of the Barnagore Company, to discuss the possibility of a formal association in the industry. This was followed by a formal meeting on 23rd April 1884 at the office of the Bengal Chamber of Commerce, where the participants decided to draft the articles of association for presentation to the general body of jute mill-owners and agents. Finally, the Indian Jute Manufacturers Association was duly formed on 7th July 1884 with 19 founder-members who constituted more than 80 per cent of the contemporary industry. The first general meeting of the Association was held on 10th November, 1884. It should be noted that later on (25th July, 1902) the name of the Association was changed to Indian Jute Mills Association (IJMA).

The objectives of the Association, as laid down in its original articles of association, were as follows:

“to encourage and secure united feeling and action, to collect and classify facts and statistics, to open out new markets, to fix points of custom, to work on one form of contract, to obtain the removal of grievances, to arbitrate on matters of dispute, to communicate with public authorities or kindred associations, generally to promote and protect the interest of those engaged in the industry in all matters

relating to it, specially in matters touching the interests of the members of the association and to do all such other lawful deed as are incidental or conducive to the attainment of the above objectives or any of them.”¹¹

The underlying spirit of these objectives was certainly to take various decisions in unison so that the industry could function smoothly. While it sought to resolve various disputes and grievances that individual mills confronted - such as labour disputes or grievances against government policies - the industry’s development aspects were well on the agenda. In the latter respect, the collection of trade information, its dissemination among the member-mills, as also the thrusts for new markets, provided such boosts as the industry called for at that critical juncture of its development. Another important thrust area where the Association was interested from its inception was to regulate the industry’s production level by various agreements such as restrictions on working hours, fixing up of the output quota for individual mills and so on that remunerative prices could be obtained. Although implicit in the original set of objectives, these were duly accommodated in later amendments.

The amended objectives of the Association, as adopted later on, were as follows:

- I. (a) To protect, forward and defend the trade of members of the Association.

¹¹ Cited in Indian central jute committee, Report of marketing of jute ,pp. 31-32

- (b) To impose restrictive conditions on the conduct of the trade.
 - (c) To adjust the production of the mills in the membership of the association to the demand in the world market.
 - (d) To arbitrate on matters in dispute.
- II. (a) To protect the members of the Association against competition.
- (b) To secure the enactment of legislation to the trade.
 - (c) To secure the repeal of any legislation or prevent the passing of legislation which is damaging or may in any way damage the trade.
- III. To secure by collective bargaining, or otherwise, advantageous terms of transport.
- IV. (a) To collect, classify and circulate statistics.
- (b) To encourage and finance technical developments in plant and machinery necessary for the manufacture of jute products.
 - (c) To encourage and finance the scientific exploration of new uses to which jute could be applied and the discovery of by-products.
 - (d) To open out new markets.
 - (e) To fix points of custom.
 - (f) To adopt common forms of contract.

- V. (a) The establishment of a fund or funds.
- (b) The giving of legal assistance in connection with all or any of the above objects within the limits allowed by law.
- (c) The assistance of, or amalgamation with, other associations or societies or federation of associations or societies, having for their objects or one of their objects the promotion of the interests of the jute trade orchestra
- VI. To do all such other lawful things as are incidental or conducive to the attainment of the above objects or any one of them.

Well-orchestral objectives were thus set on motion from these objectives. The Association's primary thrust-areas, as appeared, were i) to economise the cost of production by reducing, for example, transport cost and labour cost (often, it also bargained in the raw jute market on behalf of the mills), as also by technological up-gradations, ii) to ensure remunerative prices by way of regulating supply in the market, opening up of new markets, and, of course, by dissemination of information, and iii) to act as a pressure group for conducive government policies.

Among its various activities, however, the more important one seems to be the restrictive production policies that the Association promulgated time to time among the member-mills whenever the industry suffered from a supply glut in the market. Initially, the Association had sought to fix the product prices so that the profitability could not slide below the remunerative level. 'But

price fixation was soon abandoned, and the Association thereafter concentrated on a working time agreement for the regulation of output.¹² One such policy was the voluntary agreement for the curtailment of working hours that was adopted for the first time on 15th February, 1886, under the signature of all member-mills excepting one at Hoogly and another at Serajgunj. The agreement was initially supposed to be effective for six months but it was renewed at intervals for the following five years (up to 15th February, 1891) without any break. Under this agreement the working period varied time to time between four or five days a week, or nine days a fortnight. In addition to this agreement, the Association promulgated for a short period in 1890 that every mill should shut down 10 per cent of their respective loom capacities for sacking, and also imposed a ban on the expansion of spinning capacity (excepting the cases where the work was incomplete). In another agreement on 1st April, 1899 the Association stipulated to keep idle 25 per cent of the capacities of their machinery at all member-mills. Though the agreement was meant for six months, it continued only for two months.

Similar restrictions were introduced during 1900-14 also. In 1906, for example, the working hours were confined to the sunrise-to-sunset for the period 1st January- 30th June. In respect of working days also, there were restrictive practices. The working days were reduced to five days for 15th March, 1908 - 30th September 1909, four days a week for May-August, 1910 and again five days per week for 1st September 1910 to 30th June 1912. These

¹² Tyson, Bengal Chamber of Commerce, p.67

restrictive policies of the Association helped the industry 'to maintain equilibrium between supply and world demand for jute goods.'¹³

Two more associations, viz. the Calcutta Jute Fabric Shippers Association and the Jute Fabric Brokers Association, came up during our study period to cater to the needs of the contemporary business environment in Bengal. The former was established at the fag-end of the nineteenth century when the rapidity of market expansion strained the supply-chain of Bengal jute products, and put their reputations at stake. The overseas consumers then frequently complained about the irregularity of weights and the inferiorities of product quality, including excessive moisture content that made finished goods unfit for use. Buyers of gunny fabrics for shipment often represented individually to the mills to redress those problems but at vain. Also, the attempts of the overseas consumers to ban the products of certain mills failed to yield any redressal as it was virtually a seller's market undergoing excess demand. In such circumstances, about seventy per cent firms representing gunny shipping interests met on 26th April 1898 at the office of the Bengal Chamber of Commerce to initiate concerted actions against the irregular practices of jute mills. It ended up with the establishment of The Committee of Gunny Bag Buyers comprising of six members with G.C. Scaramanga of Ralli Brothers as the chairman. Through a meeting on 2nd May 1898 the Committee represented to the Indian Jute Manufacturers Association about the poor quality of exported goods causing the loss of their reputation. They also

¹³ *ibid*, p.68

requested to settle the demurrage claims of consumers abroad. When remained unheard, they decided at a meeting on 4th January in the following year to form the Jute Fabric Shippers Association, which was duly constituted on 16th January¹⁴. Initially 16 firms joined the Association but within a year the membership strength increased to 21.

According to the original articles of association, the objectives of the Association were: “to encourage and secure united feeling and action amongst shippers, to collect and classify facts and statistics, to fix points of custom, to adopt uniform forms of contract, to obtain the removal of grievances, to arbitrate on matters in dispute other than those provided for in the rules of the Chamber of Commerce, to communicate with public bodies and authorities, or kindred Associations, and generally to promote and protect the interests of those engaged in the jute fabrics export trade of the Port of Calcutta, and especially in matters touching the interests and firms directly connected with the export of jute fabrics from Calcutta.”¹⁵ Thus, the main objective of the Association was to settle the scores with jute mills regarding their irregularities in packaging, product quality and delivery schedule. Thanks to the continuous endeavour of this Association there were significant improvements in the industry in respect of packaging, delivery system as well as the settlement of claims for inferior quality.

¹⁴ Indian Central Jute Committee, Report of marketing of jute, p. 35

¹⁵ *ibid*

The Jute Fabric Brokers Association (JFBA) was, however, set up in 1893 'to guard the common interests of its members and also in their relation to buyers and sellers and otherwise'¹⁶. The background for this setting up of the association is thus: The jute brokerage service had been thriving in Calcutta since 1875 in the wake of the steady growth of mills in and around the city, and by 1890 there were as many as 17 firms in this service sector, all belonging to European enterprises. These intermediaries had great contributions to the smooth functioning of the industry since they reduced, on the one hand, the mills' task to find out the buyers, and helped, on the other, the buyers to source requisite products. But the relation between the brokers and the manufacturers began to deteriorate since 1890 when IJMA entered into an agreement for the member-mills to fix up minimum selling rates for fabrics at the domestic market. When certain mills sought to evade the agreement in connivance with the brokers, the member-mills of IJMA reduced the rate of brokerage in protest from one per cent of the value of sales to one-half per cent, and this served as the immediate cause for the establishment of the Jute Fabric Brokers Association on 23rd August 1893.

Initially the Association had 35 members belonging to 17 firms but it steadily rose to 91 members belonging to 28 firms in 1908. Although the Association was established to settle the scores with IJMA, there emerged in course of time a close relationship between these two associations. IJMA approved certain rules and regulations of JFBA and also agreed not to deal

¹⁶ Ibid, pp. 38-39

with any European broker who was not a member thereof. In turn, JFBA considered a broking firm for membership only when it was proposed by two members of IJMA. These two associations thus used to go hand in hand in view of the mutual interests of their respective member-firms.

IV

We thus find that Bengal's modern jute industry witnessed a very high rate of growth during 1892-1914. During the period, the number of mills increased from 27 to 67, the number of looms from 1,100 to 37,541, the number of spindles from 144,625 to 789,236, and the average daily employment from 56,240 to 236,294. The industry's growth was, however, reflected in all its product lines raw jute, gunny bag and cloth. During 1892-1914 the annual growth rate of these products have been worked out at 2.03 percent, 5.72 percent, 46.16 percent respectively. The lowest growth of raw jute export has been explained by its greater domestic absorption where as the highest growth of cloth export has been accounted for by the product's low base figures.

Our study has shown that the industry became increasingly export oriented during 1893-1914. In 1914, its export outlets accounted for 92.61 percent whereas India's domestic ports absorbed only 7.38 percent and the local market less than 0.73 percent. The market analysis of gunny bags has shown that the industry exported mainly in the destinations of the U.S.A, the U.K, Australia and Strait Settlement. In 1914 these markets absorbed

respectably 73.64 percent, 7.15 percent, 6.04 percent, and 3.30 percent. In respect of cloth, this study has found the U.S.A market as the most dominant one followed by the U.K with their respective intakes at 66.79 percent and 6.40 percent in 1914.

This study has underscored the importance of Indian Jute Manufacturers Associations in the development of modern jute industry in Bengal. Although this association was originally intended to abate competition among jute mills, their activities in later years indicated its thrust for opening up of new markets and the solution of labour disputes in the industry. Among other associations, the Calcutta Jute Fabric Shipper's Association helped to safeguard the interest of overseas consumers, and the Jute Fabric Broker's Association played an important role in the development of the brokerage activities in the jute trade.

Annexure 5.1: Growth of modern jute mills in Bengal, 1879-1914

Year	No. of mills	Nominal capital (Rs.)	Spindles	Looms	Average daily employment	Capital / mill	Spindle/ mill	Looms/ mill	Capital/ labour
1879-84	21	27,070,000	88,000	5,500	38,800	1,289,048	4190	262	698
1884-89	24	34,160,000	138,400	7,000	52,700	1,423,333	5767	292	648
1889-90	27	30,215,000	158,326	8,104	60,630	1,119,074	5864	300	498
1890-91	27	31,320,000	164,245	8,204	62,739	1,160,000	6083	304	499
1891-92	27	31,320,000	174,156	8,695	66,333	1,160,000	6450	322	472
1892-93	27	34,344,500	181,172	8,976	67,291	1,272,019	6710	332	510
1893-94	28	34,724,300	192,688	9,590	69,179	1,240,154	6882	342	510
1894-95	29	36,807,000	201,217	10,048	75,157	1,269,207	6939	346	502
1895-96	29	40,309,000	216,139	10,579	78,889	1,389,966	7453	365	490
1896-97	32	43,958,000	258,154	12,784	91,389	1,373,688	8067	400	481
1897-98	32	46,050,000	274,907	13,615	95930	1,439,063	8591	425	480
1898-99	32	49,550,000	278,858	13,371	94,540	1,548,438	8714	418	524
1899-00	33	51,900,000	293,218	14,021	101,630	1,572,727	8885	425	511
1900-01	36	40,950,000	317,348	15,340	111,272	1,137,500	8815	426	368
1901-02	36	43,508,000	331,382	16,119	114,795	1,208,556	9205	448	379
1902-03	38	43,908,000	352,214	17,189	118,904	1,155,474	9269	452	369
1903-04	38	40,308,000	376,718	18,406	123,896	1,060,737	9914	484	325
1904-05	38	46,680,000	409,170	19,991	133,162	1,228,421	10768	526	350
1905-06	39	50,680,000	453,168	21,986	144,879	1,333,684	11620	564	350
1906-07	42	58,200,000	520,40*	23,561	165,692	1,385,714	N.A	561	351
1907-08	54	74,828,556*	562,274	27,244	187,771	1,385,714*	10412	505	398*
1908-09	51*	71,561,230*	639,882*	28,971	203,730*	1,385,714*	N.A	568	351*
1909-10	57	70,805,000	633,120*	30,685	202,258	1,242,193	12547	538	350
1910-11	58	70,805,000	633,120*	31,755#	210,547	1,220,776	10916	548	336
1911-12	58*	80,802,188*	722,513*	32711#	230,039*	1,385,714*	12457	564	351*
1912-13	60	76,305,000	682,300*	32,632#	199,725	1,220,776	11372	544	382
1913-14	64	78,671,000	738,977	35,803	216,377	1,229,234	11547	559	363
1914-15	67	85,725,500	789,236	37,541	236,294	1,279,485	11780	560	362

Source: For 1879-05 are from Statistical Abstract for British India, various issues, for 1905-14 from Annual Reports of the I.J.M.A, Calcutta, various issues and Government Administrative Report, various issues.

N.B. #it was included extensions in progress. *This figure is estimated to take 1906-1907 as a base year. In 1906-07 the figure for spindles is calculated from 1905-06.

Annexure 5.2: Market destinations of various jute products from Bengal, 1904-14

Year	Foreign port	Indian port	Local consumption	Grand total
1904	711,553,700	117,608,700	22,479,900	85,16,42,300
1905	753,837,300	103,355,600	15,247,400	87,24,40,300
1906	848,157,700	97,208,800	8,109,900	95,34,76,400
1907	990,001,000	122,470,300	8,367,800	1,12,08,39,100
1908	971,470,700	114,372,500	4,822,800	1,09,06,66,000
1909	1,135,478,600	116,456,200	10,698,000	1,26,26,32,800
1910	1,233,607,400	135,075,900	14,039,100	1,38,27,22,400
1911	1,036,543,300	115,166,600	18,451,600	1,17,01,61,500
1912	1,155,137,000	131,084,300	20,935,900	1,30,71,57,200
1913	1,323,831,900	124,760,600	12,761,300	1,46,13,53,800
1914	1,253,048,000	99,935,900	9,965,300	1,36,29,49,200

Source: I.J.M.A, Statement XI, various years.

Annexure 5.3: Export value of bag to foreign ports from Bengal during 1890-1905

(in Rs)

Year	United Kingdom	Egypt	United States	China	Strait Settlement	Australia	Germany	Cape Colony	South America	Turkey	Others	Total
1890-91	3,942,491	1,096,307	1,589,670	827,057	2,464,079	7,421,606	169,103	672,409	902,629	151,401	3,994,922	23,231,674
1891-92	3,212,656	1,465,719	2,324,711	1,206,291	2,728,679	5,504,330	229,379	1,020,993	1,230,305	84,574	4,973,861	23,981,498
1892-93	5,250,808	1,863,399	2,413,439	1,723,630	3,237,314	7,554,468	457,407	1,267,011	1,770,592	320,469	5,945,222	31,803,759
1893-94	4,902,384	2,407,899	3,114,270	1,241,698	4,033,301	6,316,556	317,232	1,409,582	1,777,554	361,203	6,211,160	32,092,839
1894-95	6,404,300	1,581,589	9,382,976	944,055	3,131,386	8,898,519	528,255	1,069,870	2,127,025	467,980	6,957,496	41,493,451
1895-96	5,512,119	1,972,851	4,077,463	1,902,435	4,275,003	6,950,145	856,950	2,032,408	2,830,245	1,028,553	3,230,767	34,668,939
1896-97	5,902,472	2,612,235	3,102,545	1,249,494	3,919,906	6,558,285	1,481,206	1,833,577	2,754,576	1,022,816	4,272,531	34,709,643
1897-98	7,575,466	2,303,739	4,868,345	1,361,059	3,267,006	7,494,174	2,036,596	1,267,442	1,916,338	758,926	3,948,444	36,797,535
1898-99	7,157,360	2,822,286	2,499,616	567,193	4,609,980	7,568,542	1,143,843	796,774	2,205,292	657,921	3,533,228	33,562,035
1899-00	6,786,302	1,908,725	1,904,461	1,192,416	4,108,603	9,783,443	547,752	1,347,030	3,113,320	551,631	3,533,596	34,777,279
1900-01	7,139,551	2,820,458	1,855,000	1,940,909	6,390,098	11,752,742	1,107,038	1,131,958	608,185	398,628	4,904,492	40,049,059
1901-02	6,209,160	2,676,284	3,262,783	3,403,816	4,787,860	12,016,612	1,742,003	1,097,350	821,673	714,897	6,841,680	43,574,118
1902-03	8,880,949	3,774,337	1,838,644	3,438,485	6,969,756	7,207,373	1,820,059	2,275,594	737,434	927,075	6,462,208	44,331,914
1903-04	6,330,973	3,613,861	1,127,033	2,481,596	3,663,023	10,843,735	813,722	845,751	808,489	765,112	16,609,578	47,902,873
1904-05	5,473,993	4,122,808	1,600,250	1,832,280	4,385,416	9,349,372	777,716	1,020,582	394,023	514,099	17,173,978	46,644,517
Average	6,045,399	2,469,500	2,997,414	1,687,494	4,131,427	8,347,993	935,217	1,272,555	1,599,845	581,685	6,572,878	36,641,409

Source: Annual statement of the sea-borne trade and navigation of Bengal presidency with foreign countries and Indian ports, 1894-95, 1899-1900 and 1904-05, Vol. 1

Annexure 5.4: Export value of cloth to foreign ports from Bengal during 1890-1905 (in Rs.)

Year	United Kingdom	United States	China	South America	Germany	Other Countries	Total
1890-91	203,576	2,005,276	--	--	--	619,150	2,828,002
1891-92	25,831	2,635,572	--	--	--	476,760	3,138,163
1892-93	294,494	2,996,481	--	--	--	494,370	3,785,345
1893-94	1,080,392	4,036,613	--	--	--	513,180	5,630,185
1894-95	1,575,532	7,448,615	--	--	--	826,180	9,850,327
1895-96	1,774,863	7,727,564	444,351	342,173	469,343	380,706	11,139,000
1896-97	2,430,908	10,261,033	423,694	2,748,755	55,549	365,446	16,285,385
1897-98	1,775,766	15,102,291	490,877	3,360,049	66,832	592,021	21,387,836
1898-99	1,838,510	16,015,326	362,788	4,161,316	343,190	820,512	23,541,642
1899-00	2,847,113	16,444,237	422,717	5,082,924	210,419	1,019,192	26,026,602
1900-01	6,812,689	17,147,365	2,192,872	--	2,754,431	2,448,423	31,355,780
1901-02	4,789,678	24,388,662	2,212,231	1,000	1,363,279	1,592,208	34,347,058
1902-03	1,717,800	29,559,539	2,178,991	1,000	69,544	1,818,567	35,345,441
1903-04	1,419,151	30,691,968	1,184,290	500	54,314	2,849,095	36,199,318
1904-05	1,974,900	30,198,833	1,348,109	--	269,801	2,181,404	35,973,047
Average	2,037,414	14,443,958	1,126,092	1,962,214	565,670	1,133,148	19,788,875

Source: Annual statement of the sea-borne trade and navigation of Bengal presidency with foreign countries and Indian ports, (1894-95), (1899-1900) and (1904-05), Vol. 1

N.B: (--) indicates an insignificant amount.

Annexure 5.5: The export value of cloth to foreign ports from Bengal during 1905-1915 (in Rs.)

Year	United Kingdom	United States	Australia	Germany	Other countries	total
1905-06	4,286,835	37,790,750	1,700,129	395,612	18,809,652	62,982,978
1906-07	8,125,489	53,948,419	2,100,994	546,978	17,782,046	82,503,926
1907-08	5,109,158	58,484,563	3,065,927	989,536	29,222,453	96,871,637
1908-09	2,930,172	46,889,156	2,641,615	472,498	25,934,668	78,868,109
1909-10	3,675,218	56,074,106	2,341,150	249,443	21,871,279	84,211,196
1910-11	4,244,133	55,716,650	2,950,175	475,772	20,044,072	83,430,802
1911-12	5,405,816	53,008,736	2,802,808	983,294	21,191,020	83,391,674
1912-13	6,091,852	78,711,759	3,710,448	398,187	41,605,302	130,517,548
1913-14	8,365,669	102,240,687	5,124,473	1,306,583	38,793,323	155,830,735
1914-15	8,172,603	85,656,755	5,501,849	382,315	31,313,003	131,026,525
Average	5,640,694	62,852,158	3,193,956	620,021	26,656,681	98,963,513

Source: Annual statement of the sea-borne trade and navigation of Bengal presidency with foreign countries and Indian ports, 1909-10 and 1910-11 to 1914-15, Vol.1

CHAPTER VI

Employment Scenario and Industrial Relation

The modern jute industry emerged as the single-most important field of employment in contemporary Bengal. If we take into account the case of Calcutta, the industrial hub of Bengal, we find that in 1911 there were about 50 jute mills and 109 jute presses where the levels of employment were 200,446 and 13,842 respectively. In contrast, there were 18 cotton mills, 33 machinery and engineering works, 161 brick and tile factories and 103 printing presses, which gave employment to 11,752 persons, 11,714 persons, 22,019 persons and 12,171 persons, respectively. Thus, of the aggregate factory employments of 271,944 in 1911, the modern jute industry (mills and presses together) accounted for 78.79 per cent. The figure would have been much greater than this if we take into account the tertiary activities that were developed as forward and backward linkage effects of the industry. In view of such an importance of the industry, however, this chapter analyses its employment opportunities from various viewpoints. While Section I discusses the growth of its employment generation and its composition, Section II elaborates its wage structure and various social amenities that were provided to the workers. Section III provides an analysis of the industrial unrests at jute mills during the study period. Section VI draws conclusion to the employment and industrial relation.

I

Higher incidences of employment opportunities in Bengal's jute industry may be explained by two factors. First, as we have already discussed, thanks to the decline of Bengal's traditional jute industry, a large band of workers, quite conversant with the culture of jute, became unemployed, and were available to the emerging modern industry at low wages. There was, therefore, a tendency among jute mills to opt for more labour intensity in production. Available sources indicate that Bengal mills employed 6-7 persons per loom as against two persons per loom at Dundee¹. Secondly, the modern jute technology was relatively more labour-intensive than most of the contemporary modern industries. Raw fibres that came from jute presses were first inspected and classified², involving a very labour intensive process as those were done manually by persons having knowledge about the requirements for hessian and sacking materials, and also about the strength, fineness and colour of the fibres. These apart, there were six stages in the jute technology, viz. batching, preparing, spinning, winding, weaving and finishing³. Batching involved the softening of raw fibres by applying a proper mixture of water and oil, which might be done manually or mechanically. In the former case, labour requirements were surely larger. In the preparing stage also, a good number of workers were employed as it involved carding (i.e. teasing and combing on a carding machine), drawing and roving (to bring them to requisite sizes and to make them straight). These were done on a

¹ Wallace, Romance of jute, p. 62

² Report on jute, p. 192

³ Acharya, Jute mill management, p. 143

series of machines necessitating workers at each end. Fibres then came to the spinning branch where they were spun on machines into various qualities of yarn depending on their uses for hessian and sacking purposes. Winding was, however, done on two types of machines – one for wrap yarns and the other for weft yarns – to despatch for weaving where also mechanical force was employed. Although done mechanically, skilled manpower was essential for spinning, winding and weaving. Finally, cloths were sent to the finishing department, which involved no less than seven stages – such as cropping (to remove projecting fibres from the surface of the cloth), damping (to add moisture on the fibres), calendaring (to press those fibres), mangling (to generate a soft-touch on the wrap), lapping or folding (for the purpose of packing), cutting and sewing (for the purpose of making bags), and packing and bailing. Since automation lacked in contemporary machines designs, a large number of workers were required to run them, and also to bring the products from one machine to another.

Workers, however, worked under an overall supervision of a manager who in addition looked after the quality of product and the maintenance of buildings and machinery. One or more assistant managers worked under him depending on the scale of production. In the case of larger mills, one assistant manager looked after the production side while another manager was entrusted with the maintenance of machinery. Technical jobs were carried out under the supervision of an engineer. He was responsible for maintenance of engines, boiler plant,

electrical equipments, pump houses, water supply and workshops, in addition to keeping up buildings including workers' accommodation, and the maintenance of internal roads. In the office, however, a few clerical staffs were deployed in charge of various sections, such as the procurement of raw jute, the despatch of finished products, storage, payment of wages etc.

Unskilled hands were employed in the industry mainly as porters for loading and unloading purposes, as also for carrying semi-finished fibres from one machine to another. The industry's requirements of skilled workers were, however, met through on-the-job training. Such training spanned variously – such as one week for both shifters and porters, but about one year for weaver⁴. Spinners were generally recruited from people working as shifter at least for about a year. While male workers were preferred in weaving where higher skill was imperative, both male and female workers, as also the children, were recruited in spinning and winding⁵. Children aging between 9-14 years were deployed as shifter⁶ while the finishing and sewing departments employed both male and female workers.

Before coming to jute mills jute fibres from agriculture were processed at jute presses. There were basically two stages in this process, assorting and bailing. The assorting team consisted of one inspector (locally called *jachander*), 2-3 cutters and one leader (called *sardar*),

⁴ Foley, Report on labour, p. x

⁵ Administrative report in Bengal, (1872-73), p.226

⁶ Foley, Report on labour, p. x

working under the common supervision of the bale-supervisor or the manager⁷. The activities in this department involved: a) thorough inspection of fibres so as to separate them in different bundles according to quality, and b) cutting out the hard portions of the root, and also the cleansing of small bark particles from the fibre by beating⁸. In the baling department, the labour intensity was high when processing was carried out manually, but it was reduced to a good extent when hydraulic baling machines (either the grid press or the cyclone press) were used.

Jute pressing required two types of skilled workers, viz. assorters and packers⁹. Assorters should have good knowledge and experience about the quality of fibres, and also about cutting and hackling those fibres. The packers should have familiarity about the packaging of jute bails. The only unskilled workers were the export collies (commonly known as *sangrias*), who brought loose jutes, carried bale of jute from the press to export godown, and loaded them into trolley for shipping. They worked in a team consisting of two or three persons.

The employment scenario in jute mills had been very promising during the study period. Table 6.1 shows that from 38,800 during 1879-84, the average daily employment in such mills grew up to 52,700 during 1884-9, 111,272 in 1900-01, and further to 236,294 in 1914-15. Thus, compared to the base of 1879-84, the employment level rose by about 350 per cent at the close of our study period. Although the growth rate in

⁷ Report on jute. p.192

⁸ *ibid*

⁹ *Ibid*, p.196

the series appears quite volatile, it is not so in the five-yearly series. The averages of yearly growth rates are worked out at 4.5-6.5 per cent in 1890-4, 1895-99 and 1900-04, and then it picked up to 24.16 per cent in 1905-09, and moderated at 3.54 per cent in 1910-14. The study period thus ended up generating extensive employment in Bengal.

Table 6.1: The growth of employment in Bengal jute mill

Year	Average daily employment	Rate of growth (in %)	Year	Average daily employment	Rate of growth (in %)
1879-4	38,800	-	1901-02	114,795	3.17
1884-9	52,700	35.82	1902-03	118,904	3.58
1889-90	60,630	15.05	1903-04	123,896	4.20
1890-1	62,739	3.48	1904-05	133,162	7.48
1891-2	66,333	5.73	1905-06	144,879	8.80
1892-3	67,291	1.44	1906-07	165,692	14.37
1893-4	69,179	2.81	1907-08	187,771	13.33
1894-5	75,157	8.64	1908-09	203,730	8.50
1895-6	78,889	4.97	1909-10	202,258	-0.72
1896-7	91,389	15.85	1910-11	210,547	4.10
1897-8	95,930	4.97	1911-12	230,039	9.26
1898-9	94,540	-1.45	1912-13	199,725	-13.18
1899-00	101,630	7.50	1913-14	216,377	8.34
1900-01	111,272	9.49	1914-15	236,294	9.20

Source: a) For 1879-05 are from Statistical Abstract for British India, various years b) For 1905-14 from Annual Reports of the I.J.M.A, various years and Government Administrative Report, various years.

From the Foley's report on labour in 1905 we get an idea about the employment opportunities in individual jute mills in this province. Among 29 jute mills under namely (Table 6.2) the lowest level of employment is found at 2,306 for the Anglo-India Jute Mill No. I, whereas the Budge Budge Jute Mill appears as the largest employer giving jobs to 7,003 workers daily. The employment strength is found to be greater than 5,000 in as many as 10 mills - such as the Fort Gloster, Budge-Budge, Gouripur, Howrah, Baranagar, Hastings, Kankinara, Shamnagar, Kamarhati, and Titaghar Jute Mill. These surely vouched for high labour intensity in contemporary jute mills.

Table 6.2: Employment opportunities in different jute mills in Bengal in 1905

Name of the mill	Persons employed	Name of the mill	Persons employed
Clive	3,200	Kankinara	7,513
Anglo-India No. I	2,306	Central	4,000 to 5,000
Anglo-India No II	3,600	Union	3,050
Champdany	2,800	Arathoon	More than 4,000
Dalhousi	2,500	Lower Hoogly	3,500
Fort Gloster	5,296	Shibbpur	3,733
Budge Budge	7,003	Khurdah	4,500
Gouripur	8,000	Standard	4,000
Howrah	6,000	Shamnagar	6,420
Ganges	3,762	Alexandra	3,000
Baranagar	7,000	Kamarhati	5,000-6,000
Hastings	6,000	Titaghar	5,861
Victoria	4,829		

Source: Prepared on the basis of data in Foley, Report on labour, pp. vi-ix, xxii-xxviii

Employment structure in jute mills was, however, largely dominated by male workers. Available sources reveal that at the outset of the twentieth century, the proportion of adult male was as high as 78 percent and that of adult female was 22 percent. The child labour constituted of 12 percent of aggregated workers¹⁰. These compositions certainly varied across the mills. Table 6.3 gives insight in this respect for seven contemporary mills. It is interesting to note that the proportion of child labour was greater than that of female workers at Budge Budge and Kankinara Jute Mills. Possibly lower wage rates for children induced the mills to employ a larger percentage of such labour. Taking all these mills together, however, the proportion of child labour is seen to have been slightly lower than that of female worker. It was 12.85 per cent for the former and 14.68 per cent for the latter.

¹⁰ Foley, Report on labour, p. x

Table 6.3: Composition of workers in Bengal jute mill

Name of the mill	Male	Female	Children (below 14 years)	Total
Fort Gloster	5,200 (87.79)	408 (6.89)	315 (5.32)	5,923
Budge Budge	5,320 (86.01)	550 (8.89)	1,138 (18.40)	7,008
Howrah	4,032 (67.20)	1,229 (20.48)	739 (12.32)	6,000
Kankinara	5,161 (68.69)	985 (13.11)	1,367 (18.20)	7,513
Victoria	3,296 (68.25)	991 (20.52)	542 (11.23)	4,829
Shamnagar	4,542 (70.75)	1,190 (18.54)	688 (10.71)	6,420
Titaghar	4,011 (68.44)	1,040 (17.74)	810 (13.82)	5,861
Total	31562 (72.47)	6393 (14.68)	5599 (12.85)	43,554

Source: Prepared on the basis of data available in Foley, Report on labour, pp. viii-xxvi
N.B. Bracket terms represent the percentage of the total.

The industry's gender composition of workers at Calcutta was largely different from that at Dundee. At the latter location it was dominated by female workers, for which it was often nicknamed as 'the women industry'¹¹. Table 6.4 brings out the gender composition of Dundee jute mills, and also the incidences of child labour in the industry. The latter is seen to have grown from 3.40 per cent of total labour force in 1870 to 10.37 per cent in 1885, but reduced to 6.58 per cent in 1890. The employment level of such labour was, however, greater in Bengal jute mills, which was on average 12.85 per cent (vide Table 6.3).

Table 6.4: Gender composition of workers at Dundee jute mills

Year	Child labour (below 13 years)			Adult labour (above 13 years)			Aggregate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1870	151 (25.25)	447 (74.75)	598 (3.40)	4,221 (24.87)	12,751 (75.13)	16,972 (96.60)	4,372 (24.88)	13,198 (75.12)	17,570
1874	1,418 (43.06)	1,875 (56.94)	3,293 (8.68)	10,114 (29.19)	24,531 (70.81)	34,645 (91.32)	11,532 (30.40)	26,406 (69.60)	37,938
1878	1,542 (43.78)	1,980 (56.22)	3,522 (9.69)	9,032 (27.51)	23,800 (72.49)	32,832 (90.31)	10,574 (29.09)	25,780 (70.91)	36,354
1885	2,000 (46.29)	2,321 (53.71)	4,321 (10.37)	10,950 (29.31)	26,403 (70.69)	37,353 (89.63)	12,950 (31.07)	28,724 (68.93)	41,674

¹¹ Gordon, Women, work and collective Action, p. 29.

1890	1,483 (50.31)	1,465 (49.69)	2,948 (6.58)	12,925 (30.88)	28,937 (69.12)	41,862 (93.42)	14,408 (32.15)	30,402 (67.85)	44,810
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Source: Parliamentary paper H.C 1896, Vol.-90, pp.202-03

N.B. a) Bracket terms under the columns Male and Female in Child and Adult Labour represent the percentages of Total in the columns of Child and Adult Labour respectively,

b) Bracket terms under the column Total in Child and Adult Labour represent the respective percentages of the Aggregate column.

The proportion of female labour was thus greater than that of male labour both among the child and adult workers. In 1870, their proportions were 74.75 per cent and 75.13 per cent respectively. This ratio, however, reduced in both categories over the years. In the child category, the male workers became slightly ahead of the females in 1890 with their percentage at 50.30 as against 49.70 per cent for female workers. However, in spite of its decline over the years, the percentage of female workers in the adult group remained at 69.12 as against 30.88 per cent for male workers. A comparison between Dundee and Bengal jute mills, however, shows the incidence of female workers was 69.12 per cent in the former but only 14.68 per cent in the latter.

We have adumbrated above that the decline of Bengal's traditional jute industry provided the initial supply of labour to the emerging jute mills. In fact, in 1885, the majority of jute workers were of local origin¹². But the rapid growth of the industry that we have seen to have taken place from the early 1890s severely multiplied the demand for labour. At the same time, the industry sought to obtain workers at low rates of wage for the sake of sustaining global competition. In such circumstances, the domestic labour market in Bengal could not cater to

¹² Foley, Report on labour, p.14

the growing demand of the industry. Large-scale labour immigration became therefore a routine for the industry whereby workers hailed from the far-away places like Moghyr, Patna, Arrah, Chapra, Gazipur, Mirzapur, Cuttack and Orissa¹³. Indeed, the rapid development of railway network connecting Calcutta with those places during the second half of the nineteenth century facilitated the process of migration. It was also facilitated by the fact that the industry required only a low level of skill, which could be ensured through a little amount of training. There was, however, no systematic recruiting agency on the mills' behalf¹⁴. Workers came on their own either on the basis of inspiring information from the people of their respective places of origin or under the inspiration from labour leaders (known as *sardar*). Some authors, however, identified certain push factors in the neighbouring states that fuelled the process of labour migration to jute mills in Bengal. According to that school of thought, political instabilities, social repressions and very limited job opportunities in those areas acted as the relevant push factors¹⁵. The jute mills' pull forces are believed to be of lesser importance because, in that case, the mills could have attracted workers from within the province.

The rapidity of the event is, however, learnt from the fact that while there was an insignificant proportion of migrant people among jute workers before 1885, an inquiry report by a deputy police commissioner reveals that in 1895, there were as many as 35,000-40,000 migrant people in the band of 70,000 strong workforces in the modern jute

¹³ Ibid, p.vii

¹⁴ ibid, p.9

¹⁵ Hann, Migrant labourers in Eastern India, p.163

industry¹⁶. Thus, within a span of a decade, the migratory labour constituted more than 50 per cent of total workers. Indeed, that was a period of steady growth for the industry. The rapid stride of migration continued thereafter. In a survey among twenty-five jute mills in Bengal, Foley found that two-third workers in most of the mills under survey comprised of migrated people in 1905¹⁷. Only in the three mills - the Champdany Jute Mill, the Fort Gloster Jute Mill, and the India Jute Mill - local Bengali workers dominated¹⁸. In the India Jute Mill, two-third workers came from Srerampore, a nearby place, while others included mainly the workers from Orissa¹⁹. The migratory workers in the Fort Gloster Mill included about 1,000 persons from Orissa, 500 persons from the up-country, and another 500 from Bilaspur. In the Champdany Jute Mill also, a few workers hailed from the places like Chapra, Patna and Orissa.²⁰

There was, however, a division of workers in the religious line. A contemporary survey reported that about 68 per cent of jute workers in Calcutta were Hindu and the rest 32 per cent were Muhammadan²¹. Hessian weavers in many mills hailed mainly from the up-country places having faith in the Muslim religion while Bengalis, especially the Hindus, wove the sacking cloth²². It transpired from the contemporary reports that up-country Mohammedans were much stronger, steadier and regular in work, and also more careful in finer tasks. The workers from Orissa,

¹⁶ Cited in the Report of the labour enquiry committee(Calcutta,1896), para 10 as referred by Dipesh Chakroborty in Communal riots and labour, p.141

¹⁷ Foley, Report on labour, p.14

¹⁸ Ibid, p. viii

¹⁹ Ibid, p. xxiv

²⁰ Ibid, p. viii

²¹ Ibid, p. x

²² Ibid, p.14

however, worked generally as weavers but were never found in the spinning division²³. The industry also employed some Telugu workers from the Ganjam district of South Orissa and Bilaspuri workers from Central Province. A few Chinese people were also employed as carpenters in some mills²⁴. Indeed, the top positions in the industry- such as manager, assistant manager, overseer etc.- were earmarked for Europeans.

There was, however, an interesting distinction between the pattern of migration from North India and South India. Generally, workers came from North India, especially from North Bihar, Orissa and U.P, leaving their families at their respective home villages. They usually went back to their villages during the harvesting period spanning for 3-4 months during April-June. But the Telegu speaking workers from Andhra Pradesh, migrants from the Ganjam district of South Orissa, and also the Bilaspuri from Central Province came with their families. Though settled permanently around the factory locations during the service period, they maintained relations with the relatives in ancestral villages and usually returned back after retirement to their respective places of origin.

Substantial job opportunities for the migrant workers were also created in jute presses. Total employment in this branch of the industry was enumerated at 13,729 in 1901, which increased slightly to 13,842 in 1911. The Census of 1901, however, revealed that out of its total employment in that year, there were 1,344 persons belonging to the category of owner, manager and

²³ Ibid, p.14

²⁴ Ibid, p. ix

supervisor while operatives and other subordinates stood at 12,385²⁵. Religion-wise enumeration in that census showed a slightly higher proportion of Muslim population in this job, namely 7,113 as against 6,344 people of the Hindu faith and 249 people of the Christian faith (excluding a minor proportion of people of other faiths). The Census of 1911 gave a detailed account of employment structure in Bengal's jute presses (vide Table 6.5). The table shows that, as in jute mills, the male workers largely dominated the employment structure in jute presses also. The ratio of female and male workers was found at 1: 8.75 in 1911. But, in contrast to what we have found in the case of jute mills, the jute presses employed a much higher proportion of unskilled workers. As against the employment of 2,458 skilled workers, 10,349 unskilled workers were employed in the job²⁶. Their further distinction from jute mills was that they employed a lower proportion of child labour. While its proportion was above 12 per cent in jute mills, it was only 1.60 per cent in jute presses in 1911. But the most important distinction was that jute presses dispersed over a wider region so that was generated employment across the province. Table 6.5 shows that much of the employment was certainly created in and around Calcutta, which accounted for more than 56 per cent of the aggregate employment. Outside the Calcutta agglomerate, the industry created jobs for 3,468 in Dacca, 1,640 in Pubna, 324 in Cooch Behar, 185 in Mymensing, 171 in Tripura, 139 in Nadia and 104 in Faridpur. The employment level was, however, insignificant in Jalpaiguri and Malda, at 35 and 20 respectively²⁷.

²⁵ Census of India 1901, Vol.-VI(A), part-II, table xv, p.318

²⁶ Census of India, 1911, Vol.-V, part-II, table-XV-E-XV-V, p.342-343

²⁷ In 1891, Census of India showed that the total employment of jute manufacturers, managers and agents in Burdwan, Presidency, Dacca and Rajsahi division were 16,997, 13,631, 5,029, and 989 respectively. Vol.-IV, Table-XVII-B.

Table 6.5: Employment structure in Bengal jute presses in 1911

District	Total number of worker		Director, Supervision & Clerical		Skilled worker			Unskilled worker			
	M *	F*	European & Anglo-Indian (M)	Indian (M)	European & Anglo-Indian (M)	Indian		Above 14 years		Below 14 years	
						M	F	M	F	M	F
Howrah	1,570	114	4	48		269		1,249	114		
24 Parganas	4,951	420	26	292		965		3,656	397	12	23
Calcutta	658	51	3	4	1	89	35	559	16	2	
Nadia	133		1	11				119		2	
Jalpaiguri	35			11		1		20		3	
Pabna	1,495	145	7	130	2	357	27	887	105	112	13
Malda	20							20			
Dacca	2,829	639	58	306	8	444		1,982	638	31	1
Mymensing	151	34	1	17		4		117	28	12	6
Faridpur	94	10	1	18	1	13	4	59	6	2	
Tripura	169		6	21	1	63		78			
Coach Behar	317	7	1	69	20	151	3	73	4	3	
Total	12,422	1,420	108	927	33	2,356	69	8,819	1,308	179	43

Source: Census of India, 1911, Vol.-V, part-II, Table-XV-E-XV-V, p.342-343

N.B. : M* represents male workers and F*, female workers

The working season at jute presses spanned over nine months, from August to March, so that their workers became seasonally unemployed for three months each year²⁸. In view of this inconvenience of the job, the press management usually provided the workers with advance payments to maintain themselves during the lean months. Because of a very high proportion of unskilled workers in this activity, the industry largely employed migratory workers that were available at low rates of wage. Migration of labour took place from the up-country districts like Balia, Mirajpur, Gazipur, Jaunpur, Azamgarh, Shahabad, Patna, Benaras, and Muzaffarpur²⁹. Some workers also hailed from Fatehpur, Rai Berili, Partabgarh, Allahabad, Basti, and also from Orissa. While it was common that workers migrated to these presses on their own, the press management sometimes deputed *sirdars* with advance money to recruit workers from those distant places³⁰. Often, they recruited men in gangs comprising of two to six members, commonly known as *khatas*, who hailed either from the same village or from the same joint family (including women and boys), and worked under a headman, known as *Khatader* ³¹.

²⁸ Foley, Report on labour, p. vii

²⁹ Ibid, p.25

³⁰ Ibid, p.26

³¹ Ibid, p.25

II

Chapter II has already made a comparative study of wage rates among jute mills in various countries including Bengal. It has been found that for working hours of 55 per week, the wage rate for spinner was Rs. 1.85 in Bengal as against Rs. 4.50 at Dundee. The wage rate, however, varied widely in the industry depending on the nature of jobs, skill of the workers as also their ages and genders. There were six types of activities in a jute mill, namely, porting, winding, spinning, sewing, weaving and mechanical. While, for the purpose of porting, both adult male and female workers as also the child labour were employed, only adult male workers were engaged in winding, weaving and as mechanics. Whereas the child labour was preferred in the spinning purposes, adult workers of both sexes were equally preferred in the sewing department. An official report of 1906 reveals the following wage structure in contemporary jute mills (Table 6.6)³².

Table 6.6: Weekly wages of the workers in Bengal Jute mills

Department	Ordinary worker (in Rs.)	Trained worker (in Rs.)
Porting: Adult male	2.25 – 2.36 (i.e. 2.30)	2.50 – 2.72 (i.e. 2.61)
Adult female	1.84 – 2.84 (i.e. 2.34)	2.06
Children	1.00 – 1.25 (i.e. 1.12)	1.36
Average	1.92	2.01
Winding: Adult male	3.00	4.00
Sewing: Both adult male & female	2.50	3.00
Spinning: Children	2.60	3.42
Weaving: Adult male	4.00	6.50
Mechanic: Adult male	N.A	10.00 -12.00 (i.e. 11.00)

Source: Foley, Report on labour in Bengal, p. x

³² For the wage rate in different jute mills, see Annexure 6.1

The table shows that excepting the job of mechanics (which exclusively required trained personnel), all the jobs in jute mills were performed both by ordinary and trained workers. Employment of ordinary workers, indeed, economised the labour cost, but a greater proportion of unskilled labour might have adverse impacts on the quality and the time-schedule of production. The management was, therefore, required to make a trade-off between these workers at the time of manpower planning. Table 6.6, however, shows that the wage differential between ordinary and trained workers was as high as 62.50 per cent for weavers, 33.33 per cent for winders and 31.54 per cent for spinners. It was at a lower side of 20 per cent for sewers, 21.43 per cent for child porters and 13.47 per cent for adult male porters.

The activity-wise wage differences in the table were that the mechanics obtained the highest wage rate of Rs. 11 per week whereas the porters were at the lowest end of the scale, receiving only Rs. 1.99 per week on average (between ordinary and trained workers). In between these, there were weavers (at Rs. 5.25 per week), winders (at Rs. 3.50 per week), spinners (at Rs. 3.01 per week) and sewers (at Rs. 2.75 per week). Sometimes, the Chinese workers were employed in jute mills as carpenters at an average wage rate of Rs. 12 per week³³. It is interesting to note that child workers in spinning used to receive more than what adult male workers earned in winding, or what adult male and female

³³ Foley, Report on labour, p. xxv

workers got in sewing. While the majority of the workers were paid weekly, the monthly payment system prevailed for joiners, smiths, clerks and other office staff. All these recruitments were considered permanent in the sense of the regularity of work in six days per week. But they could be terminated from the job under a notice of seven days for the workers who were paid weekly, and for one month for those who were paid monthly. In addition to these wages, however, the jute mills generally followed an incentive/ penalty scheme to regularise the workers' attendance. A small amount of bonus was awarded for regular attendance but trifling fines were imposed for irregular attendance or bad work. There was no payment for insurance against sickness, accident or old age. Only in case of workers who were injured at the work place, wages were paid at half of their wage rates during the period of absence from duty³⁴.

Although this prevailing wage structure appeared to be lower both in the absolute term and relative to that in other jute manufacturing countries, their family income was attractive in view of the common practice among the Calcutta mills to appoint all the members of a family in different types of job. In addition to augmenting the family income of workers, this practice ensured a greater supply of labour to the industry and also improved the regularity of workers' attendance. In the contemporary society, a worker's family usually consisted of five

³⁴ Royal commission of labour, p.141

members. For such a family with two sons and one daughter, Foley estimated the family income at Rs. 17 per week (vide Table 6.7), i.e. Rs. 68 per month. A family's income at this level was considered attractive, and thus induced the workers to migrate from far-away places.

Table 6.7: Weekly wages of a family mill hands

Member of the family	Wage (in Rs.)
Father (weaver)	6.00
Mother (sewer)	3.00
Boy (spinner)	3.00
Do (spinner)	3.50
Girl (sewer)	1.50
Total	17.00

Source: Foley, Report on labour in Bengal, 1906 p. x

A different wage structure prevailed at jute presses. There the wage rate varied across the workers' type, viz. importing porters (i.e. those who brought raw jute from river jetties to sheds), exporting porters (who took away jute bales to river jetties), press porters (those who were employed for bringing jute from one place to another within the factory), assorters and press workers. Even there were wage variations within each category depending on the level of tasks. Thus, for example, depending on the distance between the jetty and the shed, the wage for importing porters varied from press to press. For them, the average wage was 42 paisa per bale (i.e. the bales meant for export). The average earning for an exporting porter was 12 Annas per day and that of a press porter 12anna – Re.1 per day³⁵. It should be noted that the wage rate for press porters

³⁵ Foley, Report on labour, p.24

in Narraingunj was greater than that in Calcutta.³⁶ However, an assorter's wage depended on the quality of fibres they were to work with. The rate was high for superior quality fibre as it required more careful grading, cutting and packing. In Calcutta, the rate was Rs.2.50 per bale for white jute, Rs.2 per bale for tossa jute, and Re.1 per bale for daisee jute³⁷. On average, an assorter earned 12 Annas per day. There were also variations in pressing charges across the presses. In 1914, it was on average Rs.1.84 - Rs. 2 in the mills located on the side of Calcutta and Rs.1.72 to Rs.1.84 in those on the Howrah side³⁸.

Working hours at jute mills changed time to time during our study period. Prior to the introduction of electricity in 1895, work was confined from dawn to dusk. Till 1872, the practice was to commence the work at six o'clock in the morning and to continue through six in the evening with two intervals, one during 9 A.M-10 A.M and the other during 1 P.M -2 P.M. A 10-hourly working period thus prevailed in the industry³⁹. A new system, the so-called reliving squad system, was introduced in 1872 whereby the working period was extended to 5 A.M -7 P.M for the summer season with three shifts of work. Each worker worked for 9-10 hours at a time with a rotational break for three hours and a tiffin break for one hour⁴⁰. Jute mills were, however, subject to several restrictions in

³⁶ Ibid, p.26

³⁷ Report on jute trade, p. 197.

³⁸ For the wage rate of skilled and unskilled workers of jute presses in Calcutta, see Annexure 6.2.

³⁹ Wallace, The romance of jute, p. 40

⁴⁰ Foley, Report on labour, p. xxii.

1881 when the Factory Act was introduced in India. The Act stipulated that the minimum age of a child worker to be employed in the industry should be seven years; that such a labour could be employed for nine hours a day at the maximum; and that in each month at least four holidays should be earmarked for them⁴¹. Further suggestions followed from the Factories Commission in 1891. Jute mills were urged to increase the minimum age for the child labour from seven years to nine years, and also to curtail the working hours from 9-14 hours a day to 7 hours a day for children and 11 hours a day for women⁴². Though these several restrictions were in line with the practices in the contemporary industries in other countries, those could not be administered properly in Bengal due to the lack of interest among the mill-owners, inadequate administrative capacities, and, above all, the ignorance of the working people. The situation was further aggravated after the introduction of electricity in the industry in 1895. In fact, the application of electricity spread very fast across the industry. Within a decade, as Foley found, electricity covered twenty-two mills out of twenty-five mills that he surveyed. Equipped with the electrical power, however, modern mills at Calcutta extended the working hours till 8-9 o'clock in the evening, adding 2-3 hours daily in the working schedule⁴³. Some mills even

⁴¹ Ghosh, A history of Calcutta jute mills, p. 89

⁴² *ibid*

⁴³ Judicial Dept. Police. Progs. A. January 1896.

started four shifts a day, severely straining the working community⁴⁴. In such circumstances, the Factories Commission intervened again in 1908 with a stipulation that daily working hours should not be more than six for the child labour, and not more than 11 for female workers and the young workers in the age group of 14-17 years⁴⁵. The commissioner further stipulated that all such workers should be given to enjoy a compulsory interval after six hours of continuous work. But, as before, all these stipulations remained largely unheeded. It was found in 1912, that in the shift system 75 per cent of workers belonging to the adult group of both sexes were compelled to work for 13½ hours while the rest had to work for more than 10½ hours⁴⁶. In addition to satisfying their greed for higher profit, the mill-owners extended the working hours in view of the shortage of workers in the contemporary jute labour market in Calcutta.

It should be noted that the weavers did not come under the shift system. The managers did not object them to work continuously, and even if any of them took a relief by his neighbours on the shop-floor. They used to fix the workers' tasks in terms of the pieces of cloth they had to deliver each day⁴⁷.

⁴⁴ Foley, Report on labour, p. 13

⁴⁵ Ghosh, A history of Calcutta jute mills, p. 93

⁴⁶ Adam to the Secretary, GoB, Commerce department, 22 August, 1919 .

⁴⁷ Ghosh, A history of Calcutta jute mills, p. 92

In addition to wages, the workers used to get housing facilities in the vicinity of their respective working places. It was not that the mill authorities always provided such facilities. In fact, there was no such facility from the authorities' end at those mills which were located in or around the city of Calcutta. The *sardars* used to construct huts in such cases to attract workers and to keep them under their control. Those huts provided generally narrow dwelling spaces with improper sanitation facilities. Over the years, those places got over-crowded and ultimately became slum areas. But for the mills that were situated in isolated places, the authorities constructed labour lines with good sanitation facilities⁴⁸. Foley estimated that a cost of Rs. 97,000 was involved in the construction of a labour line with 200 rooms (vide Table 6.8).

Table 6.8: Construction cost of labour line at jute mills

Items	Cost (in Rs.)
Salami for land at Rs.500 a begah	12,000
Compensation to tenants and value paid for buildings demolished	8,000
Cost of filling tanks and levelling up ground	5,000
Cost of 22 lines (each containing 20 rooms) at Rs.3, 300 per line	72,600
Total	97,000

Source: Foley, Report on labour, p. vii

These were estimates for brick-built houses. The labour lines for some mills also accommodated mud-houses. There was, however, no uniform policy for rent of the accommodation for workers. While some mills charged for accommodation, others did not do so. The rent for accommodation, when charged, varied from 12 Annas to Re.1 per month

⁴⁸ Foley, Report on labour, p. 11

for brick-built room, and from 6 Annas to 10 Annas for mud-built room⁴⁹. It should be noted that all jute presses situated away from Calcutta provided rent-free accommodation for the up-country workers, and also for the local workers who lived at places 5-6 miles away from the working sites.⁵⁰

III

Industrial relation in Bengal jute industry may be periodized into three phases, i) upto 1890 when there was virtually no industrial unrest, ii) 1890-1904 that witnessed sporadic tension in such relation, and iii) 1905-14 when the trade union movement began to take shape in the industry with participation from political parties. Contemporary newspapers and the reports of Indian Jute Mills Association (IJMA) confirm a congenial environment in the labour-management relationship in the industry before 1890. For example, the report of IJMA in 1890 revealed that there was 'no notice of such disputes as occurred in the jute mills and that no strikes or lock outs of general interest or importance ever took place there'.⁵¹ The only incidence of this phase was the jute strike of 1885 that broke out in the Samnagar, Titaghar and Kankinara Jute Mills. The strike at former two mills was ignited by the management's move to reduce the wage rates without any explicit cause

⁴⁹ Ibid, pp. ix, xxii - xxviii

⁵⁰ Ibid, p. 26

⁵¹ Chakraborty, Communal Riots and Labour, p.140

showing thereof⁵². For other mill, the immediate cause was the workers' demand for higher wages. It should be noted that these strikes were the consequence of the lack of uniformity in the wage structure of jute mills in spite of their adjacent locations. In fact, lower wages for similar jobs in adjacent work-sites caused workers' grievances which sporadically caused industrial tension before 1890.

The period 1890-1904, however, witnessed a series of strikes and other industrial unrests mainly in communal lines. This is not to say that jute workers did never agitate on the ground of their privileges during this period. A wide-spread agitation, indeed, took place after the introduction of electricity in the industry in 1895, which, as we have already noted, increased the working time by 2-3 hours per day. In spite of extended working hours, the wage rates in jute mills were kept virtually unchanged. Comparing the wage structure between 1872 and 1905 Foley reported that there were no significant hikes in wage payments for different categories of workers⁵³. In fact, in 1902, the spinners of the Wellington Jute and Twist Mill, the India Jute Mill and the Samnagar Jute Mill went on strike for higher wages, and the weavers of the Hastings Mill and the Wellington Mill did so demanding shorter working hours⁵⁴. Certain mills did, however, raise their wage rates in view of extended working period but it caused workers' grievances in

⁵² Directors minute, 3 June and 29 April, 1885.

⁵³ Foley, Report on labour, p. 9

⁵⁴ Directors minute, Champdani Jute Company, 5 and 22 May, 1902.

their neighbouring mills where the management did not do so. An example in point was that when the porters' wage rate was increased at the Gundalpara Jute Mill in 1895, the porters at the Kankinara Jute Mill, mostly up-country Muslims, went on strike for similar wage hikes⁵⁵.

The communal feelings initially emerged among jute workers in Bengal, and subsequently escalated, on account of specific nature and large volume of labour immigration in the industry. The steep increase in the productive capacity of the industry since the mid-1890s, and the concurrent introduction of electricity in many mills, which we have already noted, substantially increased the demand for jute labour in and around Calcutta. Labour migration was consequently escalated in those localities. Immigrations usually took place at the behest of *sardars* who enjoyed the authority of recruitment, as well as the power of dismissal, of workers in their respective mills⁵⁶. It was, however, a common practice for the *sardars* to recruit workers from their own villages, or their vicinities, belonging to their own extended families and communities. There was, therefore, a tendency among workers coming from the same village, culture and religion to congregate in a given industrial area⁵⁷. Such a tendency helped to nourish the community consciousness among workers that often led to communal violence in and around the jute premises. The first Muslim riot broke out in Shambazar in 1891 when a

⁵⁵ Judicial Dept. Progs. A. January 1896

⁵⁶ Report of the Royal Commission of Labour in India (London 1930), pp. 22-4.

⁵⁷ Chakroborty, Communal Riots, p. 144

building, allegedly a mosque, was demolished. The leading people in the riot belonged to the community of up-country *jollahas*, who were Muslim weavers hailing from Bihar and U.P⁵⁸.

A series of industrial unrest also took place in this period for the grant of leave during the festive occasion of different communities. In fact, various fairs and carnivals organised in such occasions outside the mill-gates, and the migratory workers desired to participate there to get rid of their monotonous factory life-styles⁵⁹. In 1894, for example, certain mill-workers belonging to both Hindu and Muslim communities, urged for leave with pay during the religious festivals of *Bakr-Id*, *Muhharam* and *Rath Jatra*⁶⁰. When refused by the management, workers stroke production in some mills, for example at the Baranagar and Kamarhati Jute Mill, while others opted for unauthorised leave, in which case the management imposed fines on them⁶¹. A series of such events occurred in the following years also. In 1895, the management at the Samnagar Jute Mill granted three-hour leave on the Muslim festivals of *Id* and *Bakr-Id*. While enjoying those privileges the workers also took a full-day leave on their festival of Maharam, causing severe disputes with the management⁶². Similar disturbances took place at the Titaghar and Kamarhati Jute Mills in 1895 when Muslim workers asked for leave on

⁵⁸ *ibid*, p. 142 fn

⁵⁹ Dasgupta, Material conditions and behavioral aspects, as referred by Basu, Strikes and communal riots, p. 957

⁶⁰ Chakroborty, Communal Riots, p. 144

⁶¹ Judicial Dept. Police Branch January 1896, p. 4961

⁶² I.J.M.A report, 1896, pp.76-80

the day of *Bakr-Id*; and also at the Gouripur mill, where Muslim workers urged for holidays on the *Id*, *Bakr-Id*, and *Muhharam*, and the Hindu workers asked for leave on the *Rath Jatras*. The Victoria Jute Mill, however, avoided such unrests by sanctioning a half-day leave each on the occasions of the *Id*, and the *Rath Jatra*, and also a two-day leave for the festival of the *Durga Puja*⁶³. During these industrial unrests, the management often took resort to violence by opening fire upon the workers, or else, calling upon the police to control, both of which antagonised the workers straining the industrial relation⁶⁴.

Communal consciousness often took the form of communal riots, which occurred several times since 1894 within and outside the jute-mill premises. Such events broke out at the Rishra, Titaghar, and Lower Hoogly Jute Mills in 1896 when Muslim workers sacrificed cows on the Bakr-Id day. When the Hindu workers sought to resist it, a communal riot followed between those religious communities in the vicinities of the mill premises, which subsequently spread to the neighbouring mills, and also to outside places. A Bengali newspaper reported in that year, "This is the first year in which cow-killing quarrels have taken place in Bengal, and that in the vicinity of the metropolis."⁶⁵ Though it appeared to be a local event, the district administration pointed that it was a part of the anti cow-slaughtering movement that broke out during 1888-93 at

⁶³ Ghosh, A history of the Calcutta jute mill hands, p. 202

⁶⁴ Basu, Strikes and communal riots, p. 958

⁶⁵ Chakraborty, Communal Riots and Labour, p. 148

Arrah, Gaya and Saran from where workers migrated to these jute mills⁶⁶. To curb those disturbances in the mill areas, the Government restricted cow slaughtering at some places. It was even forbidden in those areas where Muslim workers were proportionately insignificant in number. These restrictive measures angered the Muslim workers and caused communal riots at the Rishra and Standard Jute Mill in 1895, and also at the Titagharh Jute Mill in 1896⁶⁷. The low-caste up-country Hindu and Muslim workers were mostly involved in those riots. These were followed by two consecutive riots at a wider scale on the issue of the demolition of mosque, contemporaneously known as the Calcutta Riot of 1896 and the Talla Riot of 1897, where jute mill workers involved in battle with Europeans at mills and with the police in the street⁶⁸. The latter riot paralysed the city for two consecutive days. Though organised by the Muslim workers, the upper echelon of the community refrained from them. They criticised the incidences of mosque demolition, but disinclined to support those riots on the ground that those mosques were not built up on the *waqf* land, and that the *Koran* did not sanction the construction of a mosque on such lands⁶⁹. Haji Zakariah, the Motwali of the largest mosque in Calcutta, even issued a *fatwas*, restraining the Muslim workers from any riotous events. Another riot took place at mill premise in 1898 when the government sought to curb the menace of

⁶⁶ Ibid, p.148

⁶⁷ Judicial Dept. Police Branch, A, Nos. 119-21 and 52-3,1896.

⁶⁸ Judicial Dept. of Police, A, Nos. 1-13.

⁶⁹ Judicial Dept. of Police Branch, November 1897.

plague, a contemporary epidemic in Bengal, by a set of regulations that were believed to discriminate between the workers and the administrative people, mostly Europeans⁷⁰. The workers strongly agitated against those regulations, and went on strikes, forcing the government to repeal those regulations⁷¹.

Labour movement in jute mills in Bengal, however, got an important dimension since 1905 when the Swadeshi Movement broke out in the political scenario of this province. Prior to that year, labour movements in jute mills were rather localised to individual mills without any intervention of political personalities. But from 1905 onwards, those movements were organised on a much larger scale across the industry where political parties intervened. From the available sources it is gathered that during this period labour movement spread over as many as 17 jute mills out of 37 in aggregate⁷². In October 1905, two significant strikes took place in the industry, one at the Lower Hoogly Jute Mill and the other at the Gouripur Jute Mill, because of the physical assault of workers by European assistant managers⁷³. These were followed by three successive strikes at the Fort Gloster Jute Mill⁷⁴. The first strike took place on October 16, 1905 when the mill authority strongly opposed an endeavour of the workers to unite themselves by way of exchanging

⁷⁰ Subhu Basu, *Strikes and communal riots*, p. 973

⁷¹ *Ibid*

⁷² Nirban Basu, *The working class movement*, in Hann, *A case for labour history*, p.116

⁷³ Parimal Ghosh, *A history of the Calcutta jute mill hands*, p. 207

⁷⁴ Das, *Outside intervention of jute mill strikes*, in Hann. *A case for labour history*, p. 87

friendship thread (the so-called *rakhi*). About 9,000 workers participated in the strike protesting against the incidence. They also submitted a charter of demand where hikes in the wage structure were also included. The strike continued for about a month and compelled the management to accept most of those workers' demands. The next strike broke out on December 7, 1905 in the wake of the incidence that the management prevented the workers from shouting the slogan of *Bande Matarm*⁷⁵. In fact, this slogan symbolised the political ambition of Indian leaders against the British governance, and thus showed the emerging political underpinning of the labour movement. However, the dispute was amicably settled at the behest of A.C. Banerjee who was an important political personality of contemporary Bengal. The third strike at the Fort Gloster Mill occurred in March 1906, and this time it was ignited among the clerks and *sardars* on the issue of cribbing time. For protesting against this issue, seven clerks and four *sardars* were suspended from their jobs. Only after the intervention of political leaders, those staffs were re-inducted. It should be emphasised that the underlying tone of these movements were set up by the sprit of the *Swadeshi* Movement. Since the non-Bengali workers were emotionally less involved to the sense of 'the *Swadesi*', those movements took place mainly in those mills where the Bengali workers dominated⁷⁶.

⁷⁵ *ibid*, p. 88

⁷⁶ *ibid*, p.87

A common feature of the above strikes was that the workers took primary initiative to mobilize themselves and started movements. In course of those strikes, they contacted the nationalist leaders to provide leadership. Those workers thus gave opportunities to the political leaders to come close to the working section of the society. Subsequently we find that political leaders began to take interest to form trade union at jute mills. A successful opportunity came to this end in 1906 when the workers at the Clive Jute Mill went on strike against the ill-treatments of the manager, and also for better working conditions. A.C. Banerjee provided the leadership in this movement, and formed a trade union under the name 'Union-The Indian Jute Mill Hands' where he was the president⁷⁷. In 1907, another trade union was set up at the Delta Jute Mill under the guidance of A.C. Banerjee, when its workers strove its functioning⁷⁸. The labour movement in jute mills thus entered into a new phase of development involving the political personalities so that the political parties looked into the protection and promotion of the welfare of the working class in a broader socio-economic perspective.

⁷⁷ Basu, Outside leadership, in Hann., A case for labour history, p.116

⁷⁸ NMML, PPAC, Head clerk Benodbehari Mookerjee to A.C Banerjee, as referred by Das, Outside intervention of jute mill strikes, in Hann, A case for labour history, p. 96

IV

We thus find that the development of jute industries had a far-reaching impact in the labour market of the contemporary Bengal. In addition to augmenting the demand for labour, it led to a series of qualitative changes also. The major findings of this chapter as follows:

- a) Since both jute pressing and jute processing was high labour intensive, a large number of jobs were in the industry. We have found that the average daily employment was as high as 236,294 in jute mills in 1914-15 and that in jute presses to the tune of 14,000 in 1911.
- b) Both skilled and unskilled workers were employed in the industry. While in the jute mills unskilled workers were namely deployed as porters, skilled workers were employed for running of the machines. Jute presses also employed large number of unskilled workers as porters, and skilled workers as assorters and packers. The weekly wages for trained weaver, spinner and mechanic were Rs.6.50, Rs.3.42 and Rs.11 respectively. The wage for children was Rs.3.42 in spinning department. On average, an assorter earned 12 Annas per day in the jute press, Calcutta.

- c) The employment structures of jute mill were heavily dominated by male workers. The male and female ratio has been worked at 78:22, as against of 29:71 at Dundee mills.
- d) Owing to the fast rate of industry's growth, the local labour market could not meet the demand for labour, inducing the immigration of workers from far-away places like Moghyr, Patna, Arrah, Chapra, Gazipur, Mirzapur, Cuttack and Orissa. In 1905, the ratio of migratory and local workers was found at 2: 1.
- e) The industry also witnessed a series of labour movements from the early 1890s. An analysis of those movements has shown that while, in the initial years, the industrial relation was broken down several times on the issues like disputes relating to working hours, wage and holidays, the trade union movement crept in the industry from 1905 onwards. In the later phase, the political personalities provided the leadership of the movement under various trade unions.

Annexure 6.1: Lowest monthly wages given to skilled and unskilled labour in different jute mill on June ,1901 (in Rs.)

Name of the factories	Blacksmith	Carpenter	Bricklayer Or Mason	Weaver	Spinner (man)	Engine Driver Or Boiler man	Dyer	Messenger	Cooli (Man)	Cooli or Porter (woman)
Ganges mill	21	18	14	14	9	15	8	6.50	7.50	6.50
Fortgloster	15	13	14	17.75	8.50	12	7.50	8	6	5.25
Central	14	14	12	7.75	7.36	45	6	8	7	6
Howrah	21	29	20	20	10	17			8	
Sibpur	12	16	7.50	12	8	14	9		6.50	6
Delta	12	10	15	12	10	37	10	8	7	7
National	10	9	12	8	8	20	7	8	6	6
Wellington	27.75	30.55	14*	22.64*	11.60*	22.50	9*	8.75		
India	10	9	14	12*	11.45*	13	9*	8		6*
Hastings	15	15	14*	14*	8*	15	8*	9	6*	5*
Gouripur	9	5.25	10.06			8	5	4	5	3.36
Kankinara	7.50	9	6.60	9.06	5.06	6.60	6.06	4.18	5	3.36
Baranagar	12.36	9	8	12	6	9	5	5	4.50	4
Upper Hoogly	11	10	8	9.25	7	8	5	4.18	4.36	3.42
Clive	8.36	8	8	5.25	4.54		5.25	5.25	4	3.30
Budge Budge		5.60	6.66	7.30	3.30		4.54	4.54	4	4.18
Victoria	26	22.75	21.12	24*	10.40*	20	11*	8	7.34*	6.16*
Champdany	20	18	17	16*	9	22	9	6	6.40	4.48

Source: Annual report on the working of the Indian factories act, xv of 1881-1901-02

*it is calculated from weekly wages.

Annexure 6.2: The lowest wages of different classes of skilled and unskilled labour of jute press in Calcutta, December, 1909,

Skilled labour	Rs.
Black smith	18
Fitter	21
Carpenter	24
Bricklayer	15
Mason	9
Engine Driver	14
Boiler man	16
Unskilled labour	
Collie(man)	10
Collie(women)	9

Source: Annual report on the working of the Indian factories act, 1909, p. viii

Chapter VII

Summary of observation and conclusion

The earlier chapters have discussed various aspects of jute industry in Bengal. In addition to analysing different features of growth and development of the modern jute industry during 1855-1914, we have sought to bring out its genesis in this province. We have found that although the domestic jute manufacturing in Bengal is the genesis of the modern jute industry at the global scale, its origin in Bengal is traced at Dundee. This chapter seeks to summarise these various observations and conclusions that the earlier chapters contain.

I

Among various observations and conclusions of Chapter II the more important ones are as follows.

1. Jute is a native plant of Bengal from the time immemorial. It was cultivated both for direct consumption and industrial usages. In points of its quantitative variances, the fibre got various nomenclatures in the trade. Some of them were of superior quality while others were inferior. But all of them were used for industrial purposes. The fibre was also used for various industrial purposes, such as a) cordage and rope

making, b) paper making and c) manufacturing of gunny cloth and bags.

2. A district-wise analysis of jute cultivation in Bengal has shown its predominance in the eastern half of the contemporary province. The cultivation was concentrated mainly in Pubna, Dinajpur, Rangpur, Dacca, Backerganj, Mymensing in East Bengal, and Darjeeling, Coach Behar and Jalpaiguri in West Bengal. Both in respect of area under jute and yield rate, East Bengal were ahead of its Western counterpart. As a proportion of total land under plough, the jute acreage was four percent in East Bengal and 1.88 Percent in West Bengal with their yield rates at 15 maunds per acre and 13 maunds per acre respectively.
3. The district-wise production of jute fibres and its local uses reveal the following aspects of the contemporary features of jute processing and its trade; a) three-fourths of the production of jute in Bengal were exported outside the province while only one-fourths of it were used domestically, b) the districts like Birbhum, Midnapur, Hugly, and 24 Parganas entirely exported their manufactured goods to outside markets. Possibly their location near the Calcutta Port enabled the industry to have been developed there to cater exclusively to the global market, c) these districts did not top in the list of jute exporting zones, which Rangpur,

Dacca and Mymensing occupied. In fact, the spatial distribution of jute cultivation and its manufacturing activities suggest that the industry was not localised nearby the raw material zones, d) the handloom jute industry flourished in the districts of the present jurisdiction of Bangladesh, particularly, Dacca, Rangpur, Backerganj, Dinajpur and Bogra, e) jute was also cultivated extensively in Mymensing, Chittagaon, Noakhally, Bhalpore and Murshidabad, but its entire products were consumed locally, f) certain districts like Burdwan, Jessore, Rangpur, Pubna, Dinajpur, Darjeeling, Malda, Backerganj and Sylhet partly used up jute products locally, and partly exported them to outside markets and g) the handloom industry became developed mainly in those districts where it got the support of domestic market.

4. Bengal's handloom jute industry occupies monopoly in the global market before the development of the modern jute industry at Dundee. Even after the emergence of Dundee mills, it grew apace in the global trade. By the early 1850s, it diversified its market to various countries.
5. There was a three-tier marketing network in the internal trade of jute. It was constituted of primary markets at the village level, secondary markets at the district level and a province level market at Calcutta. While both bullock carts

and boats were used at the district level transportation, large boats and steamers were employed for transshipment to Calcutta. The transportation cost in the internal trade has been worked out at Rs.0.42 per maund on average in the direct routes and an additional cost of Rs. 0.20 per maund for circuitous routes. This study has also estimated a cost of Rs. 1.02 per maund for intermediate transactions in the internal trade.

II

An analysis of the development of the modern jute industry of Dundee is of topical interest in this study from two viewpoints; first, it grabbed the market from Bengal's handloom jute industry, and second, it paved the way for the development of the modern jute industry in Bengal. Major observations in this regard in Chapter III are as follows:

1. In view of import dislocations for flax and hemp, Dundee mills experimented with several alternative fibres in the early years of the nineteenth century, and finally found solutions in the use of jute in 1836. This enhanced the U.K's intakes of raw jute from Bengal, replacing the other fibres like hemp.
2. The rapid growth of jute mills at Dundee was explained by the supply-side factors like the easy availability of raw jute from Bengal at cheaper prices, and the development of railway network between Dundee and London, as also by

series of demand-side factors like the Crimean war which accelerated the demand for sand bags.

3. On the basis of the raw jute consumption and the sale of finished goods abroad, this study has shown that there has been a rapid growth of the modern jute industry at Dundee from the 1840s through the late 1880s. Its major foreign outlets were consisted of the U.S.A in North America, Germany in Europe, and Argentina in South America. Available evidences indicate that Dundee mills took away significant market-share from Bengal handloom jute industry in the U.K, North America, Strait settlements and Ceylon. They also significantly penetrated into India's domestic market like Bombay and Madras including Bengal.
4. Dundee could not, however, retain its jute monopoly for long as the industry was subsequently developed in the U.S.A, Germany, Belgium and Austria. Those subsequent developments were nurtured by the state patronage. Those developments severely hurt Dundee's interest.
5. Though Dundee pioneered in the modern jute industry, we have found that Bengal enjoyed enormous comparative advantages in connection of this industry. In this respect, we have found a) that in respect of raw jute prices Bengal had a cost advantage of Rs. 1.89 per maund, b) the labour cost was

cheaper by 58 percent as compared to Dundee, c) in respect of transportation cost Bengal enjoyed a cost advantage of Rs. 1.48 per maund in India's domestic market and also in the markets of the Far East, and Rs.0.98 per maund at London. These competitive advantages anticipated the emergence of the modern jute industry in Bengal.

III

Major findings of chapter IV are as follows:

- 1) Having started in 1855 the modern jute industry witnessed a slower pace of growth in initial years. Its growth rate was accelerated during 1871-75 when 13 new mills were set up. By 1892 there were 24 jute mills in Bengal with a total investment at Rs.18.74 million.
- 2) One of the basic features of the industry was the managing agency system under which it flourished. Because of such an organisation, the industry enjoyed the following benefits: a) that adequate funds could be mobilised smoothly, b) that the over-head cost was minimised because of the scope economics as the managing agents undertook a number of businesses together and c) there were substantial scale of economics as the agents managed a number of jute mills together.

- 3) The industry also enjoyed cost advantages because of a) the abundance of land and water in this province, b) lower transportation cost, both on water and rail routes, owing to the industry's specific locations, and c) easy availability of coal from the nearby Asansol-Raniganj coal field.
- 4) Although a little of capital flew from Dundee to Bengal jute mills, its significant contributions were noticed in a) the supply of plant and machineries, b) the supply of managerial and technical man-power and c) the entrepreneurial support.
- 5) The industry suffered from serious teething problems, which were reflected in repeated failures of several pioneer firms. Those failed firms were re-commissioned time and again as Bengal's comparative advantages ensured good promises of profit for them.
- 6) Although Bengal's traditional jute industry dominated the market over its modern counterpart, with their respective shares at 59.54 percent and 40.46 percent in 1869-70, the scenario was reversed thereafter. In 1870-71 Bengal mill's came to occupy 50.42 percent of the aggregate export outside the province, and it increased to 95.84 percent in 1890-91.
- 7) Destination-wise, however, we have found that India's domestic ports occupied a lion's share of Bengal's jute product market till 1877-78. The foreign ports came into

dominance thereafter. The shares of these markets became 31:69 in 1878-79 but 33:67 in 1884-85. It further rose to 9:16 in 1890-91.

- 8) The course of market penetration by Bengal mills were as follows: They first captured India's domestic market from the traditional industry, and then proceeded to the markets lying in the Far East before finally entering into other continents. In the markets of Far East and other continents, Bengal mills encountered competition mainly from Dundee mills who had earlier captured those markets from Bengal's traditional industry to a good extent.
- 9) Bengal mills defeated their counterparts of Dundee not only in the latter's foreign markets but also in their domestic markets. As a result, Dundee mills were forced into a phase of decline around the concluding decade of the nineteenth century.
- 10) Product-wise, however, the gunny bags dominated over cloths (gunny and sacking, taking together) till 1889-90. Export of cloth underwent a rapid rate of growth thereafter. It grew from Rs.1,501,999 in 1888-89 to Rs.3,138,163 in 1891-92.

IV

Chapter V has generated the following major observations.

- 1) Bengal's modern jute industry witnessed a very high rate of growth during 1892-1914. From 24 mills in 1892 the industry grew to accommodate 67 mills in 1914. The number of mills, spindles as well as employment opportunities rose up proportionately. During 1892-1914, the number of looms increased from 1,100 to 37,541, the number of spindles from 144,625 to 789,236, and the average daily employment from 56,240 to 236,294 .
- 2) Rapid growth took place in all the three product lines in the industry, viz, raw jute, gunny bag and cloth. During 1892-1914 the annual growth rate of these products have been worked out at 2.03 percent, 5.72 percent, 46.16 percent respectively. The lowest growth of raw jute export has been explained by its greater domestic absorption on account of high rates of growth in jute spinning and weaving in the modern industry. The highest growth of cloth export has, however, been accounted for by the product's low base figures. In fact, the industry consolidated its export activities in cloth in later years.
- 3) The industry became increasingly export oriented during 1893-1914. In 1914, its export outlets accounted for 92.61

percent whereas India's domestic ports absorbed only 7.38 percent, and the local market less than 0.73 percent.

- 4) The market analysis of gunny bags have shown that the industry exported mainly to the destinations of the U.S.A, the U.K, Australia and Strait Settlements. In 1914, these markets absorbed respectably 73.64 percent, 7.15 percent, 6.04 percent, and 3.30 percent.
- 5) In respect of cloth, this study has found the U.S.A market to be the most dominant followed by the U.K, with their respective in-takes at 66.79 percent and 6.40 percent in 1914. Among other countries, Germany, Australia, China, and South America were also regular buyers of this product.
- 6) This study has underscored an overwhelming importance of Indian Jute Mills' Association in the development of the modern jute industry in Bengal. Although this association was originally intended to abate competition among existing jute mills, its activities in later years indicated its thrust for opening of new markets and the solution of labour disputes in the industry. Among other associations, the Calcutta Jute Fabric Shippers' Association helped to safeguard the interest of overseas consumers, and the Jute Fabric Brokers' Association played important roles in the development of the brokerage activities in the jute trend.

The development of jute industries had a far-reaching impact in the labour market of the contemporary Bengal. In addition to augmenting the demand for labour, it led to a series of qualitative changes also. We summarise the major findings in this respect as follows:

- 1) Since the jute pressing technology was more labour intensive, a large number of jobs were created in Bengal. We have found that the average daily employment was as high as 236,294 in jute mills in 1914-15. The number of employment in jute presses was to the tune of 14,000 in 1911.
- 2) Both skilled and unskilled workers were employed in the industry. While unskilled workers were deployed as porters, skilled workers were employed for the running of machines. Jute presses also employed a large number of unskilled workers as porters, and also skilled workers as assorters and packers.
- 3) The employment structure of jute mills was heavily dominated by male workers. The male and female ratio has been worked at 78:22, as against of 29:71 at Dundee mills.
- 4) Owing to the fast growth of the industry, the local labour market could not meet the demand for labour, inducing the immigration of workers to take place from far-away places

like Moghyr, Patna, Arrah, Chapra, Gazipur, Mirzapur, Cuttack and Orissa. In 1905, the ratio of migratory and local workers was found at 2 : 1.

- 5) The industry also witnessed various labour movements from the early 1890s. An analysis of those movements has shown that while, in the initial years, the industrial relation was broken down several times on the issues like disputes relating to working hours, wage rate and holidays, the trade union movement was actually started in 1905.

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