From *Palki* to Automobile:
A 'Transport Revolution' in Calcutta
1827-1947

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INTRODUCTION

Transport has traditionally been considered as a crucial factor behind the progress of any country and its society. Without proper connectivity mobility, society becomes stagnant. The transport system and its various modes have evolved through the ages. The development of technology facilitated improved mobility and also reduced the distances between various parts of the world to a great extent. The gradual development of modern transport system ushered in an era of significant human interactions[1] and also helped to initiate a continuous process of socio-cultural development.

The nineteenth century witnessed two significant global phenomena, one was the development of industrial technology in Europe and the other was the aggressive colonisation of various parts of the world by the European powers.[2] With the advent of global maritime trade, various modes of mechanised units came to the fore. As the European naval forces took centre stage, they started manufacturing and using big sea vessels which would later be replaced by their own technologically advanced steamboats and steam powered ships.[3] On land, to support the phenomenon of urbanisation and its necessity for a dedicated transport infrastructure, modern horse-drawn carriages were used in the burgeoning urban settlements. The juggernaut of development kept progressing through the emergence of modern railways, tramways and automobiles. These technologically superior modes of transport would gradually replace their predecessors. The inventions of these modern modes of transport shaped the era of colonialism, as these were utilised by the Europeans to colonise vast stretches of Asia and Africa. For Great Britain in particular, the Industrial Revolution turned out to be a watershed as this period catapulted them to new heights by empowering them with the most modern forms of technology. Fuelled by their newfound technological superiority,

they set out to rule the world and the fruits of the Industrial Revolution put them ahead of other European powers in the race to colonise the world.[4] They had at their disposal, modern steamboats to penetrate the interiors of Asia and Africa, medicines to provide protection to their personnel in the harsh tropical terrains and modern weaponry to fight in any conflict with the natives. These technological marvels helped the British to gain an upper hand and establish prized colonies in places like India.

Although, initially the British arrived in the garb of merchants and traders in India, their real intention was to conquer the subcontinent and establish their premier colony here. They eyed the fertile deltaic plains of the Ganges and the Brahmaputra located in the eastern part of India in the province of Bengal. After defeating the ruling Nawabs of Bengal through a sustained and effective campaign of imperialistic warfare, the British settled here. They set up the city of Calcutta on the banks of the river Hooghly.[5] As Calcutta became the focal point of the British campaign in India, the Company realised the need to develop an effective network of communication to access all the major parts of the subcontinent from this place. Hence, they started setting up a dedicated transport infrastructure. This was crucial for them to reach even the extreme corners of the subcontinent and the places they considered to be strategically significant for their future ambitions. Initially in absence of proper roadways, they utilised the waterways of Calcutta and Bengal. Later, modern roads and railways were constructed which not only connected distant places, but also provided faster mobility for the British forces. Technologically superior modes of transport like tramways and automobiles were later introduced by the British in the city of Calcutta to make the city more habitable for their own community.

The introduction of various modern forms of technology in the colonies directly affected the lives of the local population. On one hand, the colonisers were taking these steps, like developing the transport infrastructure to help their colonial ambitions. But on

the other hand, these activities enabled the natives to have direct interactions with the modern forms of technology. The things which they had never seen or witnessed before became an integral part of their daily lives. This is what I have focused on in this work of mine and I have selected my hometown, Calcutta as the area of my study. My interests have been predominantly in the history of transport and mobility and in this work of mine I have tried to explore the socio-cultural impacts of the development of surface transport in Calcutta during the colonial period.

The advent of British rule ushered in an era of imperialism that featured advent of modern transport technologies in the Indian subcontinent. The British East India Company arrived and settled primarily in the eastern province of Bengal. They set up the city of Calcutta that comprised initially of three villages which later grew on to become one of the leading urban centres in the British Empire and as well as of the whole world in the nineteenth century. Since, it was the seat of the mighty British Empire in this part of the world, it enjoyed the rewards of modernity showered on it by the colonial administration. The British were settling at that time with a long-term goal of ruling over India and they wanted to do so from Calcutta. So, they set up their base of operations in Calcutta and gradually, various administrative departments were set up here. As Calcutta became the focal point of their campaigns in India, the British administration realised the need to develop modern communications to and from the city. They wanted to access all the major parts of the country from Calcutta. The British had been eyeing various other regions of India where they wanted to spread their colonial rule and control. So, in order to make this a reality, the first and foremost thing they needed was the establishment of a proper transport network that would serve even the extreme corners of the subcontinent and they would be able to access those places from their base of operations in Calcutta. The southern riverine delta region of Bengal with its numerous rivers, creeks and canals

was known for its network of navigable waterways since the ancient period. Ports like *Tamralipta*, and *Saptagram* had flourished much earlier and were famous as centres of maritime activities and trade and commerce. These ancient ports had intricate connections with their respective hinterlands through various riverine transports. Calcutta also maintained connectivity with the north through its rivers. The primary pathway was the Ganga and travelling upstream from Calcutta in boats was the chief source mode of transport. Various types of river boats were employed on the Ganga to transfer people, goods and other items of trade and commerce.[6] Big and small passenger and goods carrying boats used to navigate on the Ganga. A kind of small boat named *Pansi* was used to ferry people when number of passengers and distance of travelling were less.[7] The word *Pansi* was derived the English term *Pinnace*. Another kind of comparatively bigger boats was called *Bajra* which carried passengers as well as a considerable amount of goods. *Bajra* was coined from the English word *Barge*. The other varieties of boats that developed in this era were namely *Bhaule*, *Kisti*, *Bhor*. *Bhaule* was primarily used by the indigenous elite. These boats provided sitting, eating and sleeping facilities for their users, thus evidently making it very popular for the members of the native elite. *Kisti* and *Bhor* were much bigger boats meant to carry goods and trading materials.[8] These were the mainstays of transport in Calcutta and Bengal until the arrival of the British. In spite of its vast expanse of marshy lands, roads and pathways were built by rulers like Sher Shah in the pre-colonial times, especially in the medieval period when a number of long-distance land routes were built connecting this region with the seat of power in the north. Indigenous bullock carts for the common people and palanquins for the elite were the principal modes of transport on these old land routes. The British came to Bengal with an advanced technology of transportation as a result of the Scientific Revolution and the subsequent Industrial Revolution. Modern steamships, river and sea vessels came to

Bengal due to the ever-burgeoning trade activities of the East India Company. The Company vessels navigated the Hooghly and the other rivers of this region as they serviced the port of Calcutta, a major colonial river port of the then British empire outside Europe. The riverfront of Calcutta developed significantly with the gradual expansion and modernization of the port facilities under the tutelage of the British. The indigenous vessels which were once the mainstay of transport were gradually replaced by the technologically superior British vessels.

The onset of the British rule culminated in much better roads and pathways in the city of Calcutta. The British developed the surface transport infrastructure to help their own cause of colonization. The opening of new roads and renovation of the existing ones resulted in the advent of vehicular movement in the form of bigger horse drawn carriages known as *Broughams*. Thus, gradually the indigenous *Palkis* made way for the modern *Broughams* introduced by the British. *Palki* or palanquins have been used as a mode of transport in Bengal and India from much earlier times. Another indigenous vehicle was the *Doolee* which was somewhat similar to *Palki*. Both these were primarily meant to carry a single person and were predominantly used in the rural areas of Bengal in the pre-colonial period. People belonging to the 'Dule' and 'Bagdi' castes carried the *Palkis* and the *Doolee*s.[9] The latter needed lesser number of people to carry it, being lightweight than palanquins and hence had more usage because of being economical. It was said that the *Palki* was a type of bed, six to seven feet long and three feet wide with a protective railing all around. Sedan chairs were also introduced. People belonging to the elite class of Calcutta preferred the *Palki* as their main vehicle of conveyance.[10] The new class of *Banyans* or the intermediaries depended on this *Palki* to attend their centres of entertainment. In fact, Sukanta Chaudhuri has mentioned in his works that the women of that era undertook bathing in the waters of the Ganga while sitting inside the *Palki*, while

it was completely immersed in the river water. At the end of the eighteenth century, first instances of horse drawn carriages were found in the British community; at the same time, *Palki* was also in vogue. Quite interestingly, with the advent of horse drawn carriages in Calcutta, the number of palanquins did not dwindle initially; rather it maintained its prosperity and was even used by many Europeans in the early years of colonisation. Then came the age of horse-drawn carriages. In the British community of Calcutta, many horse-drawn carriages were available but among them, five kinds of carriages were most popular. They were namely *chariot*, *Brownberry*, *Buggy* and two varieties of *palki-gharries*.[11] The *chariot* was big in size and very costly. It was used by the Governor, the provincial administrator, judge, high ranking government officials and doctors. The female members of their respective families would go to the 'Garher math' or the Strand riverfront in the evening to enjoy the free-flowing breeze in those *chariot*s. Another very important carriage was the *phaeton* which was classified as a first-class carriage.[12] The *landau*, *landaulet*, *tomtom*, *barouche*, *gig*, *tonjon* were all examples of the tremendous technological development that the British brought to the nascent city of Calcutta. The most important of all these was inarguably the *Brougham* carriage, named after Lord Brougham of England. It carried an aura and just like the modern steamships on Bengal waters, it became a symbol of British imperialism; the *Brougham* carriages on the streets of Calcutta exhibited the technological prowess and superiority of the British. The *hackney* carriages stayed the longest on Calcutta streets. The wheels of those carriages were layered with iron. The use of rubber tyres began in 1900. The carriages by then had become the new symbol of aristocracy; they had become very popular and a common sight in the British community of Calcutta in those days. A *town chariot* was regarded as a dress or court carriage, when highly ornamented. The French called this a *coup'e*. The carriages had become the new symbol of elitism in Calcutta. Much rivalry was there in

the British community in Calcutta regarding these vehicles. A competition would go on between them when it came to decorating their carriages. The chariots were the most sought after carriage to ooze off royalty. They had great spring, deep bodies and excellent quality hammer-cloth with a silver-mounted harness. Every young lady belonging to the Anglo-Indian community in Calcutta desired to own a fine, gorgeous carriage of her own. Any bachelor who owned such a vehicle were considered as the eligible to marry beautiful young ladies of the community. Such a history reflects the cultural and social customs that became prevalent in the city of Calcutta as a result of the advent of these modern modes of surface transport.

The development of surface transportation system of Calcutta reached another dimension with the introduction of trams on 24th February, 1873.[13] The initial trams were drawn by horses which would later be replaced by their electric driven counterparts. The first tram line of Calcutta was planned was to run from Sealdah to the Hooghly river through Bowbazaar and then the line would meander in the northward direction passing through Armenian Ghat, Aheeritollah Ghat, Shobhabazaar and finally ending at Chitpore Bridge after crossing the municipal railway line at Baghbazaar. The tramcars were to be drawn by horses. The line was completed in February, 1873 at an estimated cost of about 1.5 lakhs. The line originated from Sealdah, passed through Baithakkhana, Bowbazaar, Dalhousie Square, through the premises of the Customs House and onto the Strand Road where it ran till Armenian Ghat. Thus, Sealdah and Armenian Ghat became the two terminuses of the nascent tramway. The line was inaugurated on 24th February, 1873.[14] It was a watershed in the history of development of modern urban commutation system in Calcutta. The line was opened for passengers only and not goods as originally decided. On 2nd October, 1879, an agreement was signed between the Calcutta Corporation and the newly constituted Calcutta Tramways Co. Ltd. The Company was the business

venture of Dillwyn Parish, Alfred Parish and Robinson Sutter. This new Company got the rights to build and maintain the tram lines and also set up necessary sidings as well as connections on all the prescribed eight routes. A very significant event took place in May, 1882 when the first steam engine pulled tramcar was driven on the Chowringhee section for one month on an experimental basis. Further modernisation of the tramways was achieved in the year 1902. The electrification of tram tracks was completed on 19th November 1902. The very first electric tram ran on the Kidderpore line in that year from Esplanade to Kidderpore.[15] The second electric tram ran on the Kalighat line; the next one ran from Wellington Street to Bow Bazaar and Dalhousie. The next route to have electrified tram was the Dharamtolla line. New lines were opened in the years 1903-1908. Tollyganj, Belgachhia, Baghbazaar, Harrison Road, Lower Circular Road, Alipore and Behala got tram routes during this period. The first electric tram on the Sealdah route travelled from Sealdah to High Court via Harrison Road and Strand Road in 1905. The tracks from Sealdah were extended till Rajabazaar in 1910. The Park Circus line was inaugurated in 1925, the Rashbehari Avenue line in 1928, the Upper Circular line from Rajabazaar to Shyambazaar in 1941 and the Park Circus to Ballyganj line in 1943.[16] By 1914, the Calcutta tramway had around thirty miles of tracks and rolling stock comprising of 245 motors and 245 trailers. After the electrification of trams in Calcutta, the total area of the network measured 85188 feet of lines, out of which 1920 feet were used no more. The first Manager of the Company was Mr. Maples, followed by Mr. Martyn Wells. The role of trams in the development of Calcutta as a city is immense. It was the one of the most significant technological inventions that affected the modernisation of the city and was inarguably the best scientific turnaround for the nascent transport system of the city that developed under the patronage of the ruling British. The service it provided was unparalleled. As a result, even with the emergence of newer and more technologically

superior forms of transport like automobiles, the status of trams as the primary 'people mover' did not change for a long time. In fact, for a long time, it was the primary mode of mass transport in colonial Calcutta, unfazed by newer inventions in the sector, as it itself in its heydays was considered as an engineering marvel in the field of transportation. Thus, without any doubt, it was a pioneer in mass commutation system in urban Calcutta outside the sphere of suburban railway system. The society and its cultural practices of Calcutta were also deeply influenced by the arrival of the trams. They were not mere mechanical and technological marvels of engineering; they became symbols of this burgeoning city. They denoted or defined the tremendous development Calcutta as a city witnessed in the nineteenth and twentieth centuries when from a modest beginning of a settlement of three rural, primitive villages Calcutta was transformed into a truly modern urban settlement of the era, as the ultimate finished product of the 'Transport Revolution'.

The first automobile was seen on the streets of Calcutta in 1865. Various types of motor cars, designed and made by the leading automobile manufacturers of the world were seen in Calcutta in those days. The latest and most upgraded, modern versions of those cars ran on the streets of Calcutta adding a whole new dimension to the technological development and evolution it had witnessed from the eighteenth century. Automobiles from world famous car brands like *Ford*, *Chevrolet*, *Humber*, *Vauxhall*, *Wolseley*, *Dodge*, *Buick*, *Austin*, *Studebaker*, *Morris*, *Oldsmobil*, *Opel*, *Citroen*, etc.[17] plying on the streets of Calcutta was a common sight for the contemporary residents. The first motor-car taxi plied in Calcutta in the year 1906. The French Motorcar Company had its office at the Chowringhee Road. Taxis would run on meter from here to all directions of Calcutta.[18] They would even go to the peripheral regions of the city like Dum Dum, Barrackpore, Budge Budge. The standardised fare was eight annas per mile. The drivers were mainly Bengali people who enjoyed good pay and decent commissions. But

gradually with time, their undisciplined lifestyle and heavy drinking made them irregular and irresponsible drivers. Thus, after a certain point of time, the Bengalis were replaced by Sikhs who proved to be far better and dependable drivers. At the very end of the British reign, the taxi fare in Calcutta was a minimum of eight annas and for every quarter mile it was two annas. The first motorised bus started to operate in Calcutta in 1922.[19] The introduction of buses in Calcutta happened due to several reasons. Starting from the previous decade, Calcutta was rocked by the ongoing national movements against the British. Mahatma Gandhi had launched the Non-Cooperation movement that resulted in strikes being observed by the tram workers on a regular basis. Tram services were hit and the daily commuters had to face a lot of problems in those turbulent times in absence of the most effective conveyance system.[20] In this backdrop, the companies and firms which had goods-carrying motorised lorries, made temporary sitting arrangements on them to facilitate conveyance for the officials, employees and personnel. There were a few designated stoppages from where the 'babus' of these companies were collected by these converted lorries and transferred to their destinations. These vehicles did not have low floors making it difficult for middle aged persons to climb aboard. In this scenario, realising the prospect of making profits, the lorry owners obtained the necessary permission from the office of the Police Commissioner of Calcutta to run these vehicles as means of transporting passengers. Benches for sitting were placed on the floor or the lorries and ladders were installed to make climbing aboard easy for the passengers. The roofs were covered to protect the passengers from the blazing tropical sun. The passengers had to purchase tickets to ride on these vehicles. The system proved to be very profitable, prompting the Commissioner to issue more such permits to the lorry owners. A very important event in this regard was the launch of public buses by Walford Company.[21] Within a short span of time, they became the major bus operator in Calcutta and it is this

Walford Company which introduced double-decker buses in Calcutta. The main bus depot was located near Lalbazaar, towards the east of Bentinck Street. The double-decker buses of Walford Company did not have a roof on its upper deck which made journey comfortable for its passengers during the summers with an open deck offering a lot of air. During the monsoons, people would be seen sitting with their umbrellas over their heads in times of torrential downpour. Such was the popularity of these buses, that many people would travel from Kalighat to Shyambazaar and back just to enjoy the comfortable ride it provided for its passengers. The first double-decker bus of the Walford Company started operating in the year 1926. At one time, they had around sixty-five buses operating in Calcutta. A Muslim gentleman by the name of A. Sovan was the first to start bus operations between proper Calcutta and its downtown and peripheral areas. The bus services introduced by him between proper Calcutta and its outskirts were however not regular. In 1926, Walford Company took the initiative to operate buses from Calcutta to its outskirts and surrounding regions. The Calcutta Tramways also started such services and soon the other operating companies followed suit thus developing the connectivity between Calcutta and those regions.

I have divided my thesis into four chapters, namely The Onset of British Colonialism and Modern Transport in Calcutta, From Palki to Brougham: The Beginning of the 'Transport Revolution' in Colonial Calcutta, The Advent of Trams: A Watershed in the History of Colonial Calcutta, The Emergence of Automobiles in Calcutta: A History of Mobility and Development. In my first chapter, I have focused on the arrival of steamboats and steam powered ships in Calcutta and how in the absence of proper roads, the British utilised the canals of the city to ensure unhindered all year-round mobility within the city limits and beyond. One might argue the need to a dedicate a chapter to water based transport system in a thesis focusing on the evolution of surface transport in

Calcutta. But to understand the 'Transport Revolution' one must learn about the initial developments in the sector of transport. The water transport system was not to be the mainstay due to the unpredictable weather and unreliable navigability of the rivers and canals. The need to have a proper surface transport infrastructure and equally suitable vehicles to ensure unhindered mobility of the British colonial activities was derived from the shortcomings of the water transport system in Calcutta. In my second chapter, I have discussed how the city of Calcutta witnessed a spate of developments in the sector of infrastructure. New, modern roads were built to facilitate the horse-drawn carriages to move freely on the streets of Calcutta. I have also discussed about the traditional *Palki* and its social value and how it witnessed a change in its status after the emergence of horse-drawn carriages in the city. The third chapter brings up that era of Calcutta when it witnessed a very significant development in its transport system. The advent of tramways in the city under the British patronage revolutionised the city and its local population, as it went on to become one of the most glowing symbols of this burgeoning colonial city. I have focused on the profound socio-cultural impact of the trams in Calcutta. The final chapter is about the culmination of the 'Transport Revolution' as I delve into the world of motorised transport and its emergence in Calcutta. The coming of automobiles completed the revolution in every aspect as the city came a long way ahead from its primitive days of Palkis and muddy roads to broad, metalled roads with gleaming automobiles running on its streets and big tramcars providing mobility to the masses of the city. I have made these chapter divisions to explain the gradual phases of change of this 'Transport Revolution' and how one mode of transport slowly replaced its predecessor but each of them had a very intimate connection with the people of Calcutta and the city of the soul.

In this work, I have tried to focus on the social impact of the technological changes initiated by the British in the sector of surface transport. I have tried to portray how the

introduction of various modern forms of surface transport in Calcutta directly affected the lives of the local population. On one hand, the British East India Company was taking these steps, like developing the transport infrastructure to help their colonial ambitions in Bengal and India. But on the other hand, these activities also enabled the people of Calcutta to have direct 'interactions' with the modern forms of technology. I have tried to explore these 'interactions' by looking through the lens of the evolution of surface transport. I have tried to project how things, which the people of Calcutta had never seen or witnessed before became an integral part of their daily lives. In Calcutta, the process of evolution of the city and its society was completely intertwined and the changes happened in gradual phases. In the first phase, with the beginning of the colonial rule in Calcutta, modern water-based transportation modes arrived. Not just the British East India Company, but also the private merchants from Britain spent their capital to develop the transport network here. Since it was just early days of colonisation and there was a dearth of proper roads, the British decided to utilise the canals and rivers of Calcutta to get their work done. These steps were taken primarily to ensure smooth and unhindered movement of their own mercantile, administrative and military purposes. But it also helped to develop the city of Calcutta by making all areas connected and helping settlements to grow along these communication links. The foundation was thus set for the 'Transport Revolution' to begin in Calcutta. I have discussed these in detail in my first chapter. As the British gradually settled, they also had to make Calcutta habitable and connected to ensure a network of seamless communication between the port, the main town, the administrative and military quarters. They started constructing roads which paved the way for horse-drawn carriages to come to Calcutta. While the process was continuing the colonisers used the prevalent indigenous modes of transport like *Palkis*. But once the horse-drawn carriages came to the fore, the popularity of *Palkis* gradually fizzled out. The Bengali community of Calcutta which was so much dependent on this vehicle shunned it

for the modern carriages which became a status symbol for the elite class and a thing of fancy for the common masses. I have tried to write this history in my second chapter. As the city of Calcutta was developing under the British patronage, it witnessed an increase in population due to influx of people from the rural countryside for livelihood purposes. This made the city require a new mode of mass transport. *Palkis* and horse-drawn carriages were not adequate to move masses, they were more of a personal mode of transport. In this scenario, the advent of tramways became a watershed in the history of Calcutta. In my third chapter, I have focused on how the trams provided faster mobility to a huge number of people in a short duration of time, thus bringing the concept of public transport to Calcutta. I have also portrayed how the tram gradually became a symbol of the city as more than the colonisers, it became hugely popular among the local population. I have discussed about how the trams soon became an integral part of their life and their daily lives became centred around the availability and service of the tramways. I have then attempted to show how the 'Transport Revolution' came to a full circle with the emergence of motor cars in Calcutta. It was the third phase of the gradual change, which I have incorporated in my third chapter. I have tried to portray how the private British merchants popularised automobiles in Calcutta and how it became popular among the elite class of Calcutta.

The Transport system of Calcutta witnessed tremendous changes under the colonial supervision in the nineteenth and twentieth centuries. The colonial masters attempted to establish created a modern city through the introduction of newer modes of surface transport. The advent of modern horse-drawn carriages which gradually replaced the traditional *Palkis* and the advent of the trams and automobiles in Calcutta shaped the history of the city and its society. The city witnessed the emergence of various European horse-drawn carriages in the early nineteenth century and later the trams and automobiles.

The introduction of these new modes of transport revolutionised this region in a true sense. The changes happened in a part of the world where a few decades back, existence of such developed transport infrastructure was unthinkable. Social and cultural aspects were deeply influenced by the arrival of the technological marvels like trams and automobiles. This new surface transport system became intertwined with the soul of Calcutta and the people who lived here or were settling here. It gradually started to define their way of life and also ushered in a new age of social and cultural development. The constant 'interactions' between these technological inventions in the field of transport and the society of Calcutta created a new chapter in the history of Calcutta. The availability of faster modes of transport extended the city limits, new pockets of settlements started emerging in the peripheral regions and fringe areas of the nascent metropolis. The faster mobility supported a new urbanising trend, which in turn led to the gradual growth of a multifaceted social culture. This new culture can easily be separated from the Black Town culture that was prevalent in the previous era. The 'Transport Revolution' that gathered momentum during the colonial era gradually came to an end with the disruption of life during the Partition. Through my work, I have tried to explain the history of the colonial transport system and the subsequent 'Transport Revolution' in Calcutta – a phenomenon which I have tried to examine with a critical analysis of the technological advancement and its impact on the society and the reactions of the contemporary people to the path breaking changes happening around them.

References

[1] Jean Deloche, *Transport and Communications in India Prior to Steam Locomotion Volume I: Land Transport*. Translated by James Walker (Delhi: Oxford University Press, 1993), 8.

[2] Daniel R. Headrick, *The Tools Of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981), 3.

[3] Daniel R. Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850 – 1940* (New York: Oxford University Press, 1988), 19.

[4] Headrick, *The Tools Of Empire: Technology and European Imperialism in the Nineteenth Century*, 3-6.

[5] Raja Binaya Krishna Deb, *The Early History and Growth of Calcutta* (Calcutta: Romesh Chandra Ghose, 1905), 36-40.

[6] Henry T. Bernstein, *Steamboats on the Ganges: An Exploration in the History of India's Modernization through Science and Technology* (Calcutta: Orient Longman, 1960), 1-21.

[7] Ibid.

[8] Ibid.

[9] Reverend Father James Long, *Calcutta And Its Neighbourhood: History of people and localities from 1690 to 1857* (Calcutta: Indian Publications, 1974), 80.

[10] H. E. Busteed, *Echoes From Old Calcutta: Being Chiefly Reminiscences Of The Days Of Warren Hastings, Francis And Impey* (London: W. Thacker & CO., 1908), 123.

[11] Kaliprasanna Singha, *Hutom Pyanchar Naksha* (Kolkata: Ananda Publishers Private Limited, 2008), 56-7.

[12] Ibid., 64.

[13] S. W. Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth* (Edinburgh: T. And A. Constable, 1916), 322.

[14] Radharaman Mitra, *Kolikata Darpan* (Calcutta: Subarnarekha, 1952), 181-82.

[15] Ibid.

[16] Ibid., 183-84.

[17] Satyajit Ray, *Jakhan Choto Chilam* (Calcutta: Ananda Publishers, 1982), 17.

[18] Mitra, *Kolikata Darpan*, 188.

[19] Ibid., 189.

[20] Bipan Chandra, *India's Struggle For Independence 1857-1947* (New Delhi: Penguin Books, 1989), 23.

[21] Mitra, *Kolikata Darpan*, 189.

CHAPTER I

The Onset of British Colonialism and Modern Transport in Calcutta

The nineteenth century witnessed numerous path-breaking inventions in the field of science and technology. But few matched the importance of the invention of steamboats. This would leave a far-reaching effect not just on the history of transport and mobility, but also on the history of imperialism and colonialism. The steamboat, which had the power required to travel upstream at a great speed, carried the Europeans deep into the heart of Asia and Africa.[1] The invention of steamboat bolstered the incursion of the British forces into India and emboldened their imperialistic ambitions in the subcontinent. The concept of propulsion of a boat by the power of steam originated a long time ago, dating back to the seventeenth century, before the existence of any working engine.[2] In the late eighteenth century, many inventors in France, the United States and Great Britain started experimenting with the idea of steam-driven vessels.[3] Historians have generally marked the beginning of the 'age of steamboats' with the journey of Robert Fulton's *Clermont* from New York to Albany on the Hudson river in 1807. It was a huge success, both from commercial and technological aspects. It became instantly popular in the United States, a country which was in dire need of such faster and efficient modes of transportation. Its rugged topography comprising of mountains, deserts, dense forests and endless tracts of uncharted territories hindered the movement of the animal driven transportation system. Within a decade of this iconic journey, all the major rivers like the Hudson, Delaware, Potomac, Mississippi and their tributaries and distributaries carried regular steamboat services. In comparison, Europeans were less eager to use this new form of technology as their primary mode of transport withing their countries owing to

various factors like traditional usage of roadways. Fuel was also very costly and required regular supply from the mines. But quite interestingly, this new mode of transport soon arrived on European shores. In 1811, Henry Bell's *Comet*, a steamboat started daily service on the Clyde river in Britain. In the next four years, ten steamboats started operating on the Clyde as well as on the other rivers of Britain. By the end of the decade, hundreds of steamboats plied on the navigable rivers and lakes of Europe. Gradually, the Europeans realised the importance of steamboats in establishing and maintaining domestic connectivity and soon they took their new mode of transport to their colonies.

The first steamer in India was a small 'pleasure boat' made in the year 1819 for the Nawab of Oudh.[4] The British who had settled in Calcutta by then started to bring their steamboats to their colonial base of Bengal. The first ever steamboats were employed on the Hooghly river in Calcutta to remove deposited silt from the riverbed. The boat had an eight-horsepower engine and it was brought from Birmingham in 1817 or 1818. It was lying unused in a Calcutta warehouse until the East India Company decided to use it for the purpose of dredging the Hooghly river. It was hitched to a double set of revolving buckets mounted on a barge. The engine basically scooped mud from the bottom of the river to help big ships and sailing vessels with bigger drafts to navigate smoothly on the Hooghly river. The very first steamboat to ferry passengers appeared on the Hooghly river in 1823. Its appearance was the result of some interesting events. A merchant of the East India Company who was based in China, was supposed to launch a steam powered vessel on the Canton river. But he fell ill. Unable to initiate the launch, he sold off the parts in Calcutta. These parts were bought by a group of British merchants in the city. They distributed the shares among the main agency houses. The contract to build the wooden hull was awarded to a leading shipbuilder who had also built superstructures of gigantic European ships. A 132 ton side-wheeler was developed in the Kidderpore dry docks. It

was propelled by two sixteen horsepower *Maudslay* engines. This vessel was christened *Diana* and it belonged to Messrs Kyd and Co. Initially, it proved to be an extremely useful vessel in the tidal harbour of Calcutta. It carried passengers in all kinds of weather and natural conditions. Its inauguration was a remarkable event as it led to a significant number of people belonging to the Bengali community massing on both the banks of the Hooghly to watch it. It was also put to work as a tugboat. It used to tug big ships into the shallow harbour berths of the Calcutta port. The port of Calcutta and the Hooghly river posed many problems for ships, making it difficult for them to navigate smoothly. The introduction of steam propelled tugboats helped the cause of the inbound ships which needed guidance to follow the proper channel to enter into the dock area. But with only thirty two horsepower combined in the two engines, it was not enough for *Diana* to tow big ships that came from the high seas. The money generated from passengers travelling on the vessels was not adequate to meet the expenses. Thus, the shareholders decided to sell it. But there is no doubt about the fact that the capital of these British private merchants and their business initiative set a trend, which would be followed by the British East India Company in the latter years while developing the transport infrastructure of Calcutta.

Next year, another such boat named *Pluto* was put into service. *Pluto* was originally built as a dredger in 1822, but later it was converted to a paddle-steamer. It was not long before other steam-driven paddle-wheelers like the *Forbes*, the *Telica*, the *Comet* and the *Firefly* were operating successfully as tugboats on the Hooghly river.[5] The introduction of these boats and their considerable success generated quite a bit of an interest among the British private merchants of Calcutta. Due to the huge distance between Great Britain and India, it was quite difficult to visit their country regularly. But the arrival of this modern form of technology nurtured a hope in them. They realised that

investment of their capital in tis sector might bolster the chances of establishing a communication link between Calcutta and Great Britain. In 1825, the first steamer embarked on the journey from Calcutta to London. Interestingly, a prize had already been offered to the any shipping company willing to cover the distance in seventy days or less. Responding to this opportunity, a group built a large ship called *Enterprise.* But this ship had an engine that required a lot of fuel. It failed to make the journey in the stipulated amount of time, taking a total of 113 days to complete the arduous journey. Although it failed to get the prize, but it left a significant influence on future events and happenings in this sector. It showed the British East Indian Company that steamboats and steam power can be utilised to not only develop the general connectivity between Calcutta and their homeland. But it can also be utilised to reach the extensive interiors of the Indian subcontinent where other modes of surface transport will fail to reach. Transportation in the Indian subcontinent was time consuming, posing a lot of problems for the British East India Company. The muddy rural countryside could only handle bullock carts, caravans and horses. These modes were also the mainstay of surface transport before the British arrived in India. The river Ganga was navigable and passed through the heart of the country and thus the British decided to employ their steamboats on this river from their base in Calcutta. Slow country boats plied up and down the river maintaining the link between various distant places. In 1828, Governor-General Sir William Bentinck encouraged Captain Thomas Prinsep to begin the survey of the Ganges. Six years later, a regular steam service was initiated from Calcutta to Allahabad. An iron steamer, *Lord William Bentinck*, a 120-foot stern-wheeler with a speed of six to seven miles per hour started navigating on this route. Within a couple of years, several other steamers started to navigate on the river Ganga, namely the *Thames*, the *Jumna*, the *Megna*.[6] There were passenger steamers as well as freight carrying barges. These steamers were faster than the

indigenous country boats which required human effort and suitable wind conditions. The steamboats of the East India Company took a mere twenty days to reach Allahabad from Calcutta during the monsoons, and twenty four days during the summers when the water level receded. But the high fare discouraged the natives to avail the services they provided. The fare of a cabin from Calcutta to Allahabad cost thirty pound sterling, which was equal to the cabin fare on a steamer across Atlantic or half the cost of a journey from England to India. Thus, mainly, Company officials and British personnel, bishops, missionaries, planters and members of the Indian elite class undertook trips on these. Noteworthy statistics show that only 375 passengers travelled on a Ganges steamer from Calcutta during this period. The rate of cargo transfer ranged from six to twenty pound sterling per ton. This expensive rate also limited the amount of cargo and goods on any Ganges steamer and they primarily carried merchandise and commodities of the British community. Also, this steamer service carried guns and ammunition for the British army, flints, medicines, legal and official items. All the goods were carried upstream. On the return journey downstream, came documents and receipts from the entrusted tax collectors working for the Company. When it came to private freight, only the household goods of travelling officials and precious cargoes of silk, indigo, shellac and opium were moved on these boats as they were the only items worth the cost of transport on steamboats.[7] The British East India Company continued to run this service till 1844, after which several private firms and companies joined in the fray to run services on this route. But the river Ganga, her tributaries and distributaries were difficult for navigation because of heavy siltation every year. Apart from this problem, factors like massive deforestation in the upper catchment area of the river, continuous soil erosion diversion of water into irrigation canals decreased the draft of the river. The Hooghly river and its mother, the Ganga were both shallow and also unpredictable for consideration as an all-weather

medium of navigation due to these factors. A proposal came up in the year 1849 to build customised steamers with twelve inch draft and auxiliary wheels to tackle the sandbanks of the Hooghly and the Ganga. But by that time another very efficient medium of transportation had emerged in the form of railways, so the idea was eventually shelved.

Historically, there have been historically three routes between Europe and India. The original route was the one that circumnavigated Africa. The other two were one that went across Egypt, down the Red Sea and across the Arabian Sea. Another route was across Syria to Mesopotamia, then down to the Euphrates and the Persian Gulf to the Arabian Sea. The Portuguese merchants arrived at the port of Saptagram in Bengal in the time period between 1530-1537. From there, they went upstream on the Hooghly river between 1578-1580. The first business settlement set up by the British on the banks of the Hooghly river was in 1651. Around this time, the Dutch mercantile community also set up their own business settlement at Chinsurah, located on the Hooghly river.[8] The Portuguese and the Dutch came in their 600 tonne sailing ships, known as *Galley* or *Galleon* or *Galleous*. These ships were primarily made of wood. They entered the Hooghly river from the Bay of Bengal navigating around the Sandheads area and travelled upstream till Garden Reach or Betar. On the way, they negotiated sharp turns and shallow, heavily silted areas of the Hooghly river. Later the Portuguese ships would go further upstream to Hooghly (modern Hooghly district) and the Dutch ships would travel upstream as far as Chinsurah. The Dutch had skilled pilots at the helm of their ships who made their journey possible. But surprisingly the British naval forces were not able to do the same thing. They literally struggled to move their ships to Garden Reach. The British East India Company paid levy charges for their goods at a greater price than their competitors, but still were unable to move their goods further than Garden Reach. They eventually realised the root of the problem. They did not have skilled pilots operating

their ships like the Portuguese and Dutch. As a result, the 'Hooghly Pilot Service' was launched by them in 1668. A decade later, the first English ship crossed the region where the city of Calcutta would come up later and reached Hooghly travelling upstream. The ship named *Falcon* was led by Captain Stafford. After the British established the settlement of Calcutta, the number of wooden sailing ships coming to the harbour of Calcutta increased. They brought in people from the British Isles who started settling here.

All these ships which were coming from Europe followed the usual route taken by the Europeans while coming to India. The Cape Route around Africa was used by the East India Company in the eighteenth century.[9] They started favouring this route more at the beginning of the nineteenth century since it was safe. By then the Britain had swept away the Dutch and French fleets from the seas during the Napoleonic Wars. This route also involved no trans-shipping, no complicated trade relations with the Turks, Egyptians and Arabs who traditionally acted as mediators since the times of Vasco da Gama. They travelled on the Atlantic Ocean, circumnavigating the west coast of Africa. From the southernmost tip of Africa known as the Cape of Good Hope, they turned north towards India and navigated on the Indian Ocean and further on the Bay of Bengal to reach the mouth of the Hooghly river. Here they entered into the tidal river around the Sandheads. Although this was an age old tried and tested route, it took a lot of time. A few months was the usual time required but sometimes even a year or so was spent to reach Calcutta. Monsoon winds blow in the direction of the Indian subcontinent half the year and away the other half. This natural phenomenon made sailing easy only in one season. Hence it took about two years for the Company India personnel to complete a round trip. Not only lengthy but the route was also quite dangerous due to pirate activities off the coast of Africa. This discouraged women to travel on these ships and come to Calcutta.[10]

An alternative route was being planned as a result of all these problems. Both routes through the Middle East were called 'Overland' by the British. The one through Mesopotamia offered easy sailing between Europe and Syria and again from the head of the Persian Gulf to India. But in between lay a portion of the Ottoman Empire inhabited by the xenophobic Arab tribes and somewhat unreliable Turkish administrators. These factors made the route not quite dependable. The other connectivity through the Red Sea Route had lesser political obstacles but almost uncontrollable weather conditions and natural factors. The bottom of the Red Sea was dangerously studded with submerged rocks and coral reefs, it had a jagged coastline and piracy was a big problem. Often shipwrecked crews and their vessels were plundered by local coastal communities. Only occasionally some European travellers who were brave enough to undertake that journey would travel on this route.[11] Till the advent of steamships, the Cape of Good Hope Route was the primary link to Calcutta and the Indian subcontinent. The Company, in spite of having a huge fleet of ships were incurring losses due to the long voyage around the Cape.

An alternative route was thus devised which was thought to be less time consuming. It was decided that the ships would leave England and travel till the historical port of Alexandria in Egypt through the Mediterranean Sea. Then the route would shift from water to land. The travelling people would undertake the journey from Alexandria to Cairo on camel caravans. From Cairo, they would further go to the port of Suez located at the mouth of the Red Sea travelling through the Egyptian desert. Here the route would again shift to water. They would embark on shipping vessels headed towards India and reach Calcutta crossing the Red Sea, the Arabian Sea, the Indian Ocean and the Bay of Bengal. This route soon became known as the 'Red Sea-Suez Route'. There is considerable debate regarding the name of the person who first devised this alternative route. According to one school of thought, this contingency was first planned by Captain

James Henry Johnston. A book written by him titled, *A Prospectus for establishing by means of Steam navigation a Communication with Calcutta and the East Indies generally via the Mediterranean, Isthmus of Suez and the Red Sea* was published in 1823 by a publisher, Mr. B. Binsley of Bolt Court, Fleet Street, London. We get to know from this book that it was Captain James Henry Johnston who first planned this new route to India. Captain Johnston who was born in 1788 was an employee of the Royal Navy. He fought in the historic Battle of Trafalgar Square under the leadership of Lord Nelson. His association with India began in 1817.[12] In the year 1822, he decided to initiate a steamer service between Calcutta and Suez on discovering the simmering interest generated in Britain regarding steam navigation. He went to India to market his project to the resident Anglo-Indians of Calcutta. They needed no prodding since they were already intrigued in the matter by the performance of the ship *Derna* on the Hooghly river. A group of Anglo-Indians had set up the 'Society for the Encouragement of Steam Navigation between Great Britain and India'. They set up a fund of 69,903 rupees. The Governor-General of India, Lord Amherst, himself contributed 20,000 rupees, the Nawab of Oudh another 2,000 rupees and the rest was gathered from the business community of Calcutta. The money was offered as a prize to anyone whose steamship could make four consecutive voyages between Bengal and England at an average of seventy days per trip. This was calculated based on the route through Cape of Good Hope. Johnson returned to England to build the ship in order to win the prize. He found considerable backing and support from several London capitalists and built the ship which was the first British steamer designed for the high seas. It was 141 feet in length, weighed 464 tons and had two 60-horsepower Maudslay engines. The *Enterprise* left the port of Falmouth in England in 1825 without even a trial run, as the builders were confident enough of its success. The ship was too slow and after exactly 113 days at sea, it reached Calcutta. The ship was

captained by James Henry Johnston himself. The steamship took almost twice the time stipulated. Although the steamship sailed on calm seas, its speed was not more than 8 knots per hour. The ship had exhausted all its fuel reserves midway and as a result was unable to use its steam engines. In fact, out of 113 days, it ran on its steam engine for only 63 days. Thus, the prize was not won and the enthusiasts in Calcutta were left disappointed. The Bengal government bought her to use in the Anglo-Burmese war and the society awarded half the prize to Johnson for his gallant effort.[13] After this incident, he was appointed as the head of the department that looked after the steam shipping vessels of the Company. As a result, it was he who established the steamship manufacturing unit, dry docks where the ships were repaired, engineering units to develop the steamships in Calcutta. He also conducted and directed the river navigation of those steamships. By the end of the 1830s, with 600 horsepower distributed among nine steam vessels, four of them being Ganges boats, the Bengal Steam Department eventually outgrew its home. The accommodation boats named *Jellinghee*, *Matabanga*, *Bhagurutty* and *Soorma* were built as well. Their decks stretched in length to 125 feet and were 20 feet broad. Their holds could take 4000 cubic feet of cargo weighing 40 tons. When fully loaded, their draught did not exceed 20 inches. Between the deck, above the hold and the upper deck, a space 7 feet high was divided into passenger cabins of assorted sizes. There was also a dining saloon which was fashionably called as 'cuddy', bathrooms, pantry and storage space, a butler's room, a guard room and two cabins for the vessel's officers. The accommodation boat in tow of the *Lord William Bentinck* on the initial voyages had two cabins, sixteen feet by eight feet with conveniences; a cuddy ten by eight; one nine by six cabin in front and, in the forepart of the vessel, three cabins ten by six. Subsequent models had a total of fourteen cabins for passengers. From the monsoon of 1834 to that of 1836, the new iron steam tugs and their appendages made altogether nineteen trips from

Calcutta up to Allahabad, two going beyond on the Yamuna as far as Kalpi and Agra, and one to Dacca in east Bengal. The usual high-water season route up the Hooghly was 68 miles upstream to Nadia and then along the Bhagirathi to its junction with the great river. The Bhagirathi incidentally was open to steamboats only in the months of July till October. During the other seasons, when the water was too low, the boats from Calcutta dropped downstream to Mud Point, leaving the Hooghly to enter into the intricate network of channels located in the Sundarbans. The depth of these channels was more or less same throughout the year, subject to the tides. Some like Goodlad's Creek were so narrow that a vessel the size of the *Hooghly* could hardly pass through without brushing both banks at quite a few places. Rounding a sharp turning, the steam vessel once had its gig torn from its stern davits by the projecting branches of a large tree[14]. When all the *Maudslay* steamers were navigating on these brackish waters, by the end of 1836, the Marine Board could schedule a despatch from Calcutta once every three weeks. Frequency depended on the number of days it took to make the round trip from Calcutta to Allahabad and back. The length of passage each way depended not only on whether the boats were going with or against the current, but also whether it happened to be the high or low water season. While the short route was open during the rainy season of 1838 and boats were returning from Allahabad within 35 days, they tried to start a trip on a fortnight basis. Normally in dry weather, low water season, the average passage up took around 24 days and it took 15 days while returning back downstream to Calcutta. During the monsoons, when the water level was very high in the channels and favourable winds helped to overcome the strong currents, the journey upstream would take only 20 days. On the return, steamers were literally swept down by the current, sometimes in little over a week. The Marine Board could count on each steamer making around six round trips in the course of a year.

Once the steamer service gained popularity, it became the most common mode of transport for the officials of the East India Company. Cargo space was generally less. It was a constant problem to eliminate unnecessary freight. With time, more and more spacious workshops and repairing units were needed by the Marine Board to handle the burgeoning maritime activities. Messrs Jessop's repair works took a lot of time to complete. They were also charging money at a much higher rate for their services. The personnel of the department felt that excess money was being spent and any government entity would have done the work at a much lesser amount. In 1837, eventually, the Marine Board completed the acquisition of the late Mr. Kyd's shipbuilding unit, located downstream of Fort William. It was not until the Company's river boats had pioneered the difficult navigation and had proved their worth did other capitalists step forward. In 1837, a group of London entrepreneurs approached Lord Bentinck with a proposal. Bentinck had then just returned from his tenure in India as her Governor-General. They requested his patronage for running vessels on the Ganges.[15] Controller James Henry Johnston had ideas of his own about participating in a private steam navigation company, but on a larger scale. He wanted to run steamers from Calcutta not only on the inland navigation but throughout South-East Asia and as far as the coasts of Australia, their prized colony. However, it was in the middle of the 1840s when the boats of the first private company or rather companies were launched on the Hooghly river. The Ganges Steam Navigation Company eventually introduced new models of these water vehicles in Bengal, which were built on the principle of the Mississippi steamer that had ran successfully in the United States. These steamers were larger and faster than the older tugs and accommodation boats. These efforts stimulated a genuine interest in river steamers amongst the British community residing in India. They no longer regarded steamers as just another type of vessel, a by-product of Industrial Revolution but as an

entirely new technology that was destined to enhance their powers. In 1825, Lord Amherst, Lady Amherst, their daughter, Lord Bishop Heaver and his wife Lady Heaver, the Harrington couple, Sir Charles Grey, Sir Anthony Butler, Mr. Elliot and several other distinguished members of the then Calcutta based English elite met Johnston. The *Enterprise* travelled upstream to the 'melancholy point' on the Ganges and came back in the evening. The government paid 40,000 pound sterling and bought off the ship.[16] Johnston remained its captain till his death near the Cape of Good Hope in 1851. His name got mention on the memorial wall for English sailors in the St. Stephen's Church in Kidderpore. Some are of the opinion that his name was actually Johnson and not Johnston.

Although he planned the so-called alternative route, Johnston never actually got the chance to execute it in reality. On the other hand, according to some other sources, it was apparently Captain Thomas Waghorn who planned this new route in 1830. In 1830, a steamship by the name, *The Hugh Lindsay* of 411 tonnage travelled from Bombay to Suez under the direction of Sir Charles Malcolm. It was made of teak, 140 feet long by 25 feet wide and was powered by two eighty horsepower *Maudslay* engines. Malcolm had instructed to store enough amount of fuel on this ship as the previous venture by the *Enterprise* faltered due to shortage of fuel. In spite of this, the ship ran out of coal, her fuel at Aden, completing only one third of the entire journey. Almost a fortnight was spent to refuel the ship. Ultimately the ship reached London in a record 59 days.[17] On the other hand, the architect of the grand plan, Waghorn set up 3 hotels and 8 resting places for the travellers in the desert of Egypt between Suez and Cairo. He also made arrangements for camel caravans to carry goods and passengers and small barges and steamers in the Nile and in the canals of Alexandria for the same purpose. Waghorn did this almost singlehandedly with some meagre assistance from the Bombay Steam Committee. Fifteen

years later in 1845, his plan proved to be a huge success when he reached London with a ship carrying mail on 31st October after departing from Bombay on 1st October, a journey that took exactly a month. Initially, the ship carried only mail but gradually with time it got passengers, though a few in number at first. Regular passenger service started with the opening of the iconic Suez Canal in 1869. Ferdinand de Lesseps, a French engineer, was the man behind this technological marvel. The canal connected the Mediterranean Sea with the Red Sea thus creating an alternative waterway between Europe and Asia.[18] As a result of opening of the Suez Canal, the older or rather the original sea route circumnavigating Africa via the Cape of Good Hope was abandoned. Also, the 'Red Sea-Suez Route' became the second option as this Canal facilitated much faster mobility of steamships and vessels. Thus from 1869 onwards, goods, passenger and mail all moved between England and India through this new route. Between 1830 and 1840, the mail ships were run under the aegis of the navy fleet constituted for the colony of India. In 1840, the Peninsular and Oriental Steam Navigation Company (P & O Company) signed a trade agreement with the British Indian administration to regulate the mail ships between India and England. This company had their agent instituted in a majestic house situated in the Garden Reach area of Calcutta which faced the river bank where all their steamships were berthed. Apart from their agent, they also had their Indian headquarters located in Garden Reach. The company's property in Garden Reach included eight two-storied houses here as well as their ship repairing workshop and some huge warehouses. Mail ships set sail twice per month. There existed two routes primarily. One was the direct sea route to Suez where the ships went from Calcutta to Suez. The other route was partly overland where goods, passengers and mail travelled from Calcutta to Bombay. On this route they availed the railway line (which covered only a part of the distance) and the remaining distance was covered in mail caravans. From Bombay, steamers left for Suez

carrying the passengers and all other materials. Before the Suez Canal was opened, these passengers and the goods would be moved from to Suez to Cairo to Alexandria via the newly established rail transport and from thereon to England by steamers and vice-versa. After 1869, following the opening of the Canal, some ships of the P & O Company were moved to the port of Bombay. Gradually this number increased and in a few years time in 1882, only a handful of ships remained in Garden Reach. After some more years, those ships too were moved to Bombay. P & O Company also shifted their base to Bombay. From their new base of operations, the company operated ships between England and India on a fortnight basis. The then number 23 berth of Garden Reach harbour hosted another famous shipping company of that era, the French Compagni des Messegeries Maritimes de France. The Armenian Apcar Co. and the British Jardine Skinner Co. had also set up their bases in Garden Reach, Calcutta from where they operated ships between Calcutta and China.[19] These were primarily the main modes or systems of transportation between Calcutta and the West.

The paddle-boats always would generally leave frothy wakes across the blue waters of the Bay and would stir up the mud of Hooghly as far as Calcutta. With time, plans were made to develop the upcountry navigation of Bengal. David Scott was the pioneer of this idea. Lord Amherst had sent him as an agent to the North-East Frontier when the Anglo-Burmese war started. The North-East frontier territory was spread over an extensive mass of land- ranging from Sikkim country in the north to Cachar and Sylhet in the south and covered the entire area of Assam. The total area stretched for 400 miles. It was primarily an agricultural valley sixty miles in width along the great Brahmaputra river, flanked by dense forests and forest infested hills. In order to access the region from Calcutta, one had to avail the three land routes available, which became impossible to traverse in the monsoons. There was an alternative water through the Sundarbans that

took thirty three to forty three days in winter or during the monsoons through Mathabhanga and Jalangi when there was enough water depth for boats to travel. After passing along the Ganga, the route led through to the Padma into the Brahmaputra and thus into Assam. The riverine countryside was generally swampy and during the dry season its rich black soil grew good quality crops for the Assamese cultivators. They lived near their fields in the low-lying flood plains until the annual floods drove them from their huts. By the end of the 1830s, there existed at the periphery of the Bengal plain, a road between Goalpara and Gauhati which was passable in dry conditions only, that too on horseback.[20] For majority of the year, the only sane option left was the river. Like their counterparts on the Ganga, the boatmen operating boats on the Brahmaputra faced similar problems, if not more. for instance, unlike the Ganga, the banks of Brahmaputra were not densely populated. Rather it was mostly not populated with only pockets of settlements in some places. As a result, the banks offered not many beaten paths for tracking. When the banks were flooded or inundated during the monsoons, the bamboo pole became the only medium of advancing. Similar to the situation in the Ganges, here also the local boatmen faced hardship in the form of unpredictable flow of wind throughout the year which rendered the sails useless, while travelling upstream. Adverse winds were an additional hindrance to the boatmen in overcoming the force of a current which during August was estimated at four miles an hour.[21]

David Scott and Lieutenant Forbes sent proposals to improve navigation in the Northeast by connecting it with Calcutta, to the Bengal secretariat. The proposal was for two pairs of twenty horsepower engines fitted with copper boilers, paddle-wheels, shafts and other apparatus to give greater amount of velocity to a pair of steam vessels drawing less than three feet when loaded. One of the boats was to carry, in its cabins and under awnings on deck, besides stores and coal or wood fuel, soldiers and their accoutrements

weighing altogether fifty tons. A second vessel was to be used chiefly for towing cargo boats loaded with provisions and military stores, and occasionally embarking troops. The manufacturers were to be asked to send out working plans enabling Calcutta shipbuilders to construct the wooden hills. They were also to provide two head engineers and two assistants, bound by covenant to serve for five years. They were to be qualified to erect the machinery, with the help of Indian workmen. Lieutenant Forbes had specified to procure engines from Boulton and Watt, as he was apparently most familiar with those machine parts. However, Henry Maudslay's firm which had already supplied engines for the *Derna*, the *Enterprise*, the *Ganges* and *Irrawaddy*, submitted a quotation lower than that of Boulton and Watt. Maudslay proposed to supply two engines of fifty horsepower which he thought would be ideal to withstand the swift current of the Brahmaputra. Eventually the Company accepted the bid. The new steamers, *Hooghly* and *Berhampooter* were launched in 1828 but were not used in Assam. Political reasons can be attributed for this development. In the aftermath of the Anglo-Burmese war, the British felt that there was no need to invest that much into Assam valley as it would eventually be restored to a local raja in 1833. Basic transport facilities had to be there but not something special as the Company felt that to be an unnecessary investment which would not result in lavish outputs.[22] However, the East India Company first took initiative to install modern transportation infrastructure between Calcutta and other parts of eastern India namely Assam, Dhaka, Faridpur, Khulna, 24 Parganas and the Sundarbans. In the pre-railway era, the East India Company originally started riverine steamer services between Calcutta and Gauhati in 1848. The India General Steam Navigation Company signed a deal with the British Indian administration to run two steamers between Calcutta and the Assam valley in 1860. The steamers were run on 6 weeks' intervals. For this, government steamer services in this route were withdrawn. The service would later be revived. The most

important steamer route between Calcutta and the Brahmaputra and the Surma valleys was the one that ran from Calcutta to Dibrugarh. It was open throughout the year and had daily despatches of cargo, mail and passengers. These services ran through the Sundarbans. The second route linked the seaport of Chittagong, which was considered strategically very important by the British due to its presence on the Burma border with Barisal through a tri-weekly year round despatch service. On the Cachar line, a third water route extended from Calcutta to Silchar, open throughout the year. Depending on the quantity of cargo, it had a weekly run. The same route deviated a little to the left after reaching the Meghna river and reached Dacca and Narayanganj as the Calcutta-Narayanganj weekly direct service. The main routes were generally kept open throughout the year whereas the feeder services which ran through smaller rivers, canals and allied water channels were seasonal. They would be open only during the monsoon, though there were few exceptions in Cachar and Barisal. Quite significantly, in 1862, the Eastern Bengal Rail inaugurated its Sealdah-Kushtia line.[23] But before 1848, the only form of modern connectivity between Calcutta and Assam was the river route and the big country boats which were operated on them. The average duration of one such journey used to be around 6-7 weeks. Not only Assam but in fact from anywhere in eastern India, river was the main medium of transport and big country boats plied on the rivers carrying huge payload of goods and other materials. The most common route followed by the boats was from Goalundo to 'channel creek' river located south of Calcutta between the mainland and the Sagar Island via Arial kha, Haringhata, Bhangar, Malancha, Raimangal, Hariabhanga or Harinkhola, Gosaba, Matla, Jamira or Thakuran and the Saptamukhi rivers. From the 'channel creek', the boats would go to a place called Mud Point located approximately 70 miles to the south of Calcutta. Here the boats entered into the Hooghly river and went upstream to Calcutta. This route as can be understood, was a long distance

one and took quite a bit of time to traverse. Another aspect of this route was that it suited the big steamers only. It was very difficult for country boats to cover this huge distance. They had to navigate in very deep, rough waters close to the sea and it became very dangerous and unsafe to navigate boats in those waters, especially in the four months of the tropical monsoon season when the rivers became very rough. But connectivity was a must between Calcutta and these regions as it was dependant on the rice and paddy brought from Barisal and wood, timber supplies from the Sundarbans. Thus emerged the need to create a new line of supply, a new medium of all-weather transportation to connect Calcutta with the remote regions of its hinterland.

Major William Tolly came up with quite a brilliant and innovative idea. He proposed to the government that he would dig up and refurbish the old, degenerated tracts of the Adi Ganga and use it to connect Kidderpore harbour area with the intricate riverine network of south Bengal.[24] Which in turn will facilitate smooth, undisturbed and an all-weather navigational network from Assam, eastern Bengal, 24 Parganas and the Sundarbans. The British government agreed to the proposal and gave him permission to dug the canal, right to extract toll tax from the boats that will navigate on the canal and also the permission to set up a marketplace on its banks. Tolly started excavating the canal in 1775, finished the work in 1776 and opened it for boats and river traffic in 1777. The earlier flow of Adi Ganga was from its connecting place with the Hooghly river at Hastings from where it went towards the east for 8 miles till Garia from where it went towards the south. Major Tolly changed the direction of the canal. Initially he dredged the channel for 8 miles till Garia and increased its draft than before. Then from Garia he extended the canal for 9miles till it met the then turbulent Vidyadhari river in the east. This section did not exist before and the work was done entirely under Tolly. The Adi Ganga now met the Vidyadhariin the east at the port of Tarda.[25] Tarda was also known as

Shamukpota. So, the canal named Tolly Nullah which exists till date (although it has now become a shallow, polluted strip of water that cannot be navigated) extends from the Hooghly at Hastings in the west for 17 miles to Shamukpota in the east. Before the construction of the Tolly Nullah, the Adi Ganga was known as Surman's Nullah (8 miles from Hastings to Garia) and before that it was simply known as the Govindpur creek. Shamukpota or Tarda was located 20 miles to the southeast of Kolkata. In that period, the course of Vidyadhari was in the south-eastern direction to Canning where it met the Matla river. From there it went to Kalindi river through a network of creeks and canals. Kalindi river flew to Basantapur, located in the district of Khulna from where Barisal was accessible through a network of canals and rivers. The entire distance of this abovementioned river path was around 127 miles which was much less than the distance it usually took to travel to from Calcutta to Barisal in the conventional straight route, which was almost 187 miles. Thus, the new route became the main route of river navigation or rather it became the primary link of connectivity between Barisal and Calcutta in the pre-railway era. This new route came to be known as the 'Outer Boat Route' or the 'Lower Sundarbans Passage'. The new route via Vidyadhari also made connectivity with the northern parts easy. Bamanghata which was 14.5 miles away from Calcutta became easily accessible due to the opening up of this navigation channel. In this respect, I would like to talk about another canal that flew through the heart of Calcutta. The existence of this canal was documented by the British when they first came to Calcutta. This canal took off from the Hooghly near the Chandpal Ghat from where it flew eastwards through Hastings Street, north of Dharamtolla Street, through Wellington Square, crossing Circular Road, north of Entally and then flew south to Beliaghata from where it went further south and finally ended in the salty lakes and marshes of Dhapa.[26] It came to be known as the Beliaghata Canal[27]. The canal gradually dried up as was

documented in 1800 when its portion between Hastings Street and Entally Road became completely dry. Another reason that may have attributed to this decay was the construction of new roads, houses and settlements that killed the canal in its upper catchment area. But its lower section to Beliaghata still existed which ultimately was filled up to construct the all important railway link to Canning and Matla in the south and also the underground drainage system of Calcutta. This was in 1860 or 1861. In the east, from Dhapa to Bamanghata flew a channel of the Vidhyadhari. It was called the Central Lake Channel as it flew through the salt water lake of Dhapa and met its mother river at Bamanghata from where it flew almost 14.5 miles southeast to Shamukpota or Tarda. In 1800, as I have mentioned earlier, the Beliaghata canal dried up. Quite significantly, the Central Lake Channel dried up too thus posing a serious problem for navigation and connectivity in these parts. The government in 1810 started restoring these canals in order to facilitate mobility of goods boats from Shamukpota in the south to Bamanghata in the north via the Vidyadhari and then through the Central Lake Channel to the Lower Circular Road. Further developments were achieved in the years 1826-1831. In order to decrease river traffic on the Tolly Nullah, a new canal route was constructed between Bamanghata in the west and Hasnabad, located on the Ichamati river in the east. A small but efficient network of six canals was built by dissecting the rivers that flowed north to south in this region. They were then interconnected to facilitate a direct water route from Dhapa to Hasnabad. In the later years, the Bhangar Canal was constructed in this route. This was termed as the 'Inner Boat Route' or 'Upper Sundarbans Passage'.[28] It is to be noted that this particular channel had the draft to let small boats and steamers navigate unlike the 'Outer Boat Route' which was deep enough for big boats and steamers to travel on. While work was going on the Bamanghata Canal, another project was going on in Calcutta to construct one more canal, the Circular Canal. This project was the brainchild of Tiretta.

He had advised Lord Wellesley to construct this canal, a proposal which was not accepted then. Later in 1824, Major Schalch made a prospective map of this canal. But before he was able to materialise this plan, he was killed in the Anglo-Burmese war in 1826. in 1829, after his death, work started on the construction of this canal following his map only and was completed in the monsoon of 1833. Also in that year, the first lock-gate was set up at the Chitpur where the canal entered into the Hooghly river. To the north of the Chitpur Bridge, the canal originated from Ganga from where it went eastwards via Tullah and Belgachhia, parallel to the Circular Road.[29] It ends into the Entally or Beliaghata canal in the southeast. When it was constructed, the canal had a minimum depth not less than 6 feet in some places and average depth being minimum of 18 feet. Around 3000 labourers were used by the administration to cut the canal. Though the canal was not circular but it was named so because it ran parallel to the Circular Road. Interestingly with spread of settlement, extension of Kolkata and increase in trade and commerce, the presence of the Bamanghata and the Circular canals was unable to handle the ever increasing river traffic. The older canals became unable to handle any more boats, causing in much congestion on these channels. To solve this problem, yet another canal was dug in 1855-56 and the project was completed in 1858-59. It was named the New-cut Canal. It extended from Belgachhia in the north to Dhapa in the southeast. This canal is non-existent in the present era as it was wiped out in the post-Independence era to build newer settlements of Calcutta. This new canal created an alternative route from the Hooghly mouth at Chitpur to Dhapa. Another lock-gate was set up at Dhapa in 1883. Most of the water-based connectivity between Calcutta and Hasnabad was created between 1826 and 1831. But gradually with usage and time, the canals started drying up due to the acute problem of siltation and their drafts decreased to a large extent. The Bhangar canal was constructed in 1897 to solve this problem with two lock-gates at the two ends,

Bamanghata and Kulti. Much later in 1935, the lock-gates were abandoned. In the years following 1897, the Central Lake Channel saw a steady deterioration due to the problem of silting and soon it had to be abandoned. Another canal was dug up to maintain the navigation channel between Bamanghata and Dhapa. This new canal was constructed in 1908-10 and was called the Kristopur Canal. It originated near the Aratoon jute mill and went to the east of the salt lake region into the Bhangar Canal at Bamanghata. This canal became the primary source of navigation from eastern Bengal to Calcutta after its opening. Also, it was the last canal to be constructed to facilitate water connectivity with eastern Bengal. In 1810, the stagnated Central Lake Channel and the Beliaghata Canal were restored and reopened to facilitate transfer of various forest produces from the Sundarbans like wood and timber for fuel, trunk of 'Sundari' tree, various leaves to be used for thatching roofs of houses, etc.- items which were very essential. This entire network of canals came to be known as the 'Circular and Eastern Canals System' and the 'Calcutta and Eastern Canals System'.[30] The network spread over 1127 miles, amongst which the artificial canals constituted for 47 miles and the rest was made up of the natural riverways and channels of southern deltaic Bengal. The Calcutta System comprised of the Circular Canal, Beliaghata Canal and the New-cut Canal whereas the Eastern System was made up of the Kristopur Canal and the other natural waterways. In the beginning of the 19th century, the Central Lake Channel was called Eastern Canals, a name which was there for a long time. Even after the new name was coined, the old name was sometimes used although in a different avatar. The network then came to be known as the Old Eastern Canals. The British administration set up a separate Circular and Eastern Canals Division under an Executive Engineer. Lt. Colonel H. Goodwin became the Superintending Engineer of the south-eastern circle in 1852-53. In 1878, Mr. Isaac took up this post. On the other hand, Major Schalch was the Superintendent of Canals and Bridges. Later,

Captain Thomas Princep became the Superintendent of Canals in 1825-32. Mr. J. C. Vertannes was the Superintending Engineer of this canal division in the eighth to ninth decades of the 19th century. Galiff was the Superintendent and Toll Collector of the 'Circular and Eastern Canals System'. His office was situated at Canal Villa, Galiff Street. Captain Guthrie was the first Toll Collector of the canal. The very first canal from where this entire network of canals developed, i.e., the Tolly Nullah was not much deep or wide due to its artificial origin, which resulted in movement of small boats and lighter vessels. The British government had given Tolly the right to collect toll for 10 years. So, when Tolly died in 1874, his widow, Anna Maria Tolly sold the rights to collect toll to a fellow British, Mr. John Wilkins. But his conducting of operations proved to be unsatisfactory resulting in the government taking back the regulatory rights of the canal. It was declared in the official gazette of the year that toll which was previously collected in the name of the widow of Late William Tolly would now be extracted by the Collector of the 24 Parganas on behalf of the government. After this takeover by the administration, the canal was developed to handle bigger vessels and volume of navigation increased. But the problem of siltation stayed. It required regular dredging to maintain the steady flow of river traffic on the canal. The condition of the canal worsened near Tollyganj where regular de-siltation was done to keep it open. Gradually it became difficult to operate steamers further upstream from Tollyganj. It was possible only during high tides when excess water entered into the channel from Hooghly. The market or 'Ganj' which was set up by William Tolly was located on the eastern bank of the Tolly Nullah, south of the area where the historic Boat Canal of the Kidderpore docks merged into the Nullah. Eventually, with the development of areas around the marketplace the entire region came to be known as Tollyganj.[31] These developments happened after Tolly's death and his wife no longer held ownership of this market settlement. In the southern periphery of

Calcutta, or rather few miles away from it, another canal emerged from the Tolly Nullah, which flowed through Kaorapukur for 20 miles and ended in Magrahat. Before those areas received the fruits of modern railway connections, the only medium of transport was this canal. People travelled by boats on this canal to Magrahat which was 25 miles away from Calcutta and another 31 miles on a thin strip of canal which connected Magrahat with Jaynagar and Majilpur. What can be concluded from this discussion that, Calcutta had got a total of three link routes with Barisal in eastern Bengal. One was the Inner Boat Route, the other was the Outer Boat Route and the third was the original route used by the steamers. The India General Steam Navigation Company and the Rivers Steam Navigation Company had big steamers and modern steamships which they navigated on this route. On this route, big steamships would travel 70 miles downstream from Calcutta to Mud Point from where they would enter the 'channel creek' situated between mainland and Sagar Island. From there the ships would cross several canals to reach Saptamukhi river. There on the ships would have to cross a network of rivers including the Jamira, Matla, Gosaba, Hariabhanga, and Kalindi. The ships would reach Khulna district on crossing these rivers in deltaic Bengal. From Khulna, the ships travelled eastward to reach their final destination, Barisal. Thus, I have mentioned all the canals and waterways that was under the regulatory control of the Executive Engineer of the 'Circular and Eastern Canals System' and the 'Calcutta and Eastern Canals System'.

Various kinds of boats would bring in commodities and goods from eastern Bengal to Calcutta. Paddy, rice, fruits, vegetables, fish and other indigenous produces were the chief items that came via the boats on these waterways. Huge boats carrying wood and timber and also lime from the north-eastern provinces used to come to Calcutta via these networks. Bamboo was another item that arrived through these routes. Burmese made boats used to come from Burma. As it is evident, a huge amount of river traffic

constituting primarily of river boats congested these canals. Boats which brought consumable goods to be used in Calcutta were offloaded in the canals only. Whereas boats carrying commodities earmarked for export and allied trading businesses had to move into the Hooghly river to unload their cargo from where those were transferred to the docks or directly to the ships. Huge warehouses were constructed on the banks of the Beliaghata Canal and the Circular Canal. These warehouses handled and stored imported goods. Thus, there was a constant flow of traffic due to the presence of these warehouses. Imported goods brought on ships were either delivered directly to the marketplaces or transferred to the boats for journey into the hinterland. Another major inflow of goods was from the boats arriving from east Bengal carrying imported materials. The waterways split into two different sections after Bamanghata. One section flowed to the south to Jamuna river at Basantapur through Tarda and Kalindi river. The other section flowed east through the Bhangar Canal and then met the Jamuna at Rajpur, almost 9 miles north of Basantapur. The Vidyadhari river was at its best in the years 1830 to 1833- it had a flourishing course during this period of time. It got further volume of water when the Circular Canal and the New-cut Canal was constructed as it started receiving water from the course of the Hooghly river. But decades later in 1883, the free flowing, turbulent river saw a decline. This decline was primarily due to the creation the lock-gate at Dhapa in 1883. The rate of decline was quickened after the construction of the Bhangar Canal in 1895-97. In 1897, the open canal was obstructed by the construction of two lock-gates at its ends at Bamanghata and Kulti. The opening of Kristopur Canal in 1908-10 sounded the death knell for Vidyadhari. It started to die a slow death. In the following two decades, numerous attempts were made to revive and restore the once burgeoning river but those efforts were not successful. Finally in 1930, the entire stretch of Vidyadhari from Dhapa

to Port Canning (35 miles in length) dried up. The lock-gate at Dhapa was abandoned in 1927 and the Bamanghata lock-gate was abandoned in 1936.

It Initially, the British arrived with big sea going ships and vessels made of wood. But gradually with their increasing foothold in the country and subsequent ascension to the helm of the country, they brought huge steamships and steamers which were made of iron. These steamships were technologically far more advanced than their wooden counterparts[32]. The wooden sailing ships were no match to these new marvels of ship building technology that the British brought to the shores of India, thus culminating in a revolutionary change or rather development in the field of technology. Hoare Miller Co. used to operate huge two-storied paddle-wheel steamers between Jagannath Ghat of Kolkata and Shantipur-Kalna. These huge steamers were comparatively slower in speed. Whereas, India General Steam Navigation Co. and Rivers Steam Navigation Co. operated much lighter and faster ships and vessels. These ships were operated between Calcutta and places like Kashi, Prayag, etc. located in the north-west, in the upper Gangetic plains of north India. Being technologically much superior than their native counterparts which were mainly country boats, they gradually became the primary medium of journey on rivers between Calcutta and those places. The British further developed the sphere of water transport in Calcutta or rather Bengal in the beginning of the 20th century. The Port Commissioners started the 'Ferry Steamer Service' from Chandpal Ghat in 1907. The ferry service was gradually extended in the later years to other places located on the Hooghly river in the vicinity of Calcutta. The new places to receive riverine ferry service was namely- Kashipur, Baranagar, Dakshineshwar, Ariadaha, Liluah, Bally and Belur in the north and Ramkrishnapur, Shibpur, Garden Reach, Rajganj and Sankrail in the south. The Port Trust started this service to develop communication with the abovementioned places but with time, quite significantly, it was noticed that instead of making profits, the Port

Trust was actually incurring losses from this service. Thus, it was withdrawn in 1927 after an uninterrupted period of service for 20 years. At the time of withdrawal, the number of ferry was just a meagre 13. The intra-city ferry service later was resumed by the Calcutta Steam Navigation Co. Ltd., who had their office at Fairlie Place. This shipping firm operated two ferry services daily- one from Chandpal Ghat to Ramkrishnapur and another from Chandpal Ghat to Rajganj. The first service was conducted through steamers which went from Chandpal Ghat to Ramkrishnapur to Telcol Ghat and back to Chandpal Ghat. The other service was carried on by steamers which covered more distance- from Chandpal Ghat to Shibpur to Tokta Ghat to Botanical Garden to Metiabruz to Rajabagan to Rajganj and vice-versa. Thus, it is quite evident that Calcutta witnessed a tremendous transformation in the water transportation system during the reign of the British. Their rule ushered in, a new age of scientific modernity. Technological innovations which were not there in the previous era were now observed in daily life. Steamships, steamers and modern vessels brought by the British were thus just not advanced modes of water transport but also catalysts in a much greater mechanism of scientific and technological advancement.

References

[1] Daniel R. Headrick, *The Tools Of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981), 3-5.

[2] Daniel R. Headrick, *Technology: A World History* (New York: Oxford University Press, 2009), 64.

[3] Emory R. Johnson and Grover G. Huebner, ed., *Principles Of Ocean Transportation* (New York: D. Appleton and Company, 1920), 35.

[4] Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981), 19.

[5] G. A. Prinsep, *An Account of Steam Vessels and of Proceedings Connected with Steam Navigation in British India* (Calcutta, 1830), 3-4.

[6] Henry T. Bernstein, *Steamboats On the Ganges: An Exploration in the History of India's Modernization through Science and Technology* (Calcutta: Orient Longman Limited, 1960), 82.

[7] James Henry Johnston, *Inland Navigation on The Gangetic Rivers* (Calcutta, 1947), 28.

[8] W. H. Carey, *The Good Old Days of Honorable John Company: Being Curious Reminiscences During The Rule Of The East India Company From 1600 To 1858* (Calcutta: Queens Book Company, 1882), 1-6.

[9] Alexander Hamilton, *A New Account of The East Indies Volume I* (London: C. Hitch, 1744), 1-15.

[10] George Viscount Valentia, *Voyages And Travels To India, Ceylon, The Red Sea, Abyssinia, And Egypt, In The Years 1802, 1803, 1804, 1805, And 1806* (London: W. Bulmer And Co., 1809), 90-93.

[11] Thomas Twining, *Travels in India A Hundred Years Ago With A Visit To The United States: Being Notes and Reminiscences*, ed. Rev. William H. G. Twining (London: James R. Osgood, 1893), 52-54.

[12] Radharaman Mitra, *Kolikata Darpan* (Calcutta: Subarnarekha, 1952), 150.

[13] Auguste Toussaint, *History of The Indian Ocean*, trans. June Guicharnaud (Chicago, 1966), 205-06.

[14] Bernstein, op. cit., 84.

[15] Daniel Thorner, *Investment in Empire: British Railway and Steam Shipping Enterprise in India, 1825-1849* (Philadelphia: University of Pennsylvania Press, 1950), 23-25.

[16] Headrick, op. cit., 134.

[17] Bernstein, op. cit., 68.

[18] Lord Kinross, *Between Two Seas: The Creation of the Suez Canal* (London, 1968), 149-153.

[19] Mitra, op. cit., 152.

[20] Bernstein, op. cit., 33.

[21] C. A. White, "Waterways in Eastern Bengal and Assam," *Preliminary Report on the Improvement of Navigation of the Most Important Waterways of Eastern Bengal and Assam*, 1909, 1.

[22] Prinsep, op. cit., 43.

[23] Sunil Kumar Munsi, *Geography of Transportation in Eastern India Under the British Raj* (Calcutta: K. P. Bagchi & Company, 1980), 90.

[24] Mitra, op. cit., 153.

[25] Reverend Father James Long, *Calcutta And Its Neighbourhood: History of people and localities from 1690 to 1857* (Calcutta: Indian Publications: 1974), 211.

[26] H. E. A. Cotton, *Calcutta Old And New: A Historical & Descriptive Handbook To The City* (Calcutta: W. Newman & Co., 1907), 24.

[27] Munsi, op. cit., 18.

[28] Mitra, op. cit., 155.

[29] Cotton, op. cit., 270.

[30] Mitra, op. cit., 157.

[31]Rev. Long, op. cit., 168.

[32] Charles Singer *et al*., ed., *A History Of Technology Volume V The Late Nineteenth Century* (London: Oxford University Press, 1958), 141-55.

CHAPTER TWO

From *Palki* to *Brougham*: The Beginning of the 'Transport Revolution' in Colonial Calcutta

The advent of the British colonial rule in India ushered in an era of imperialism that was featured with modern trends of progression. Although initially the British arrived in the garb of merchants and traders, their real intention was to conquer the vast subcontinent and establish their premier colony here. They eyed the fertile deltaic plains of the Ganges and the Brahmaputra located in the eastern part of India, especially the prosperous province of Bengal. After defeating the ruling Nawabs of Bengal through a sustained and effective campaign of imperialistic warfare, the British settled here.[1] As Bengal became the focal point of the British campaign in India, the Company realised the need to develop an effective network of communication to access all the major parts of the subcontinent from the province of Bengal.[2] Hence, they started setting up a dedicated surface transport infrastructure, which would enable them to reach all the extreme corners and frontiers of the subcontinent. They wanted to create links between Calcutta and the places they considered to be strategically significant for their future ambitions. The construction of modern roads was initiated and suitable modes of transport were introduced gradually to provide faster mobility to the British economic and political forces and their interests.[3] With Calcutta's establishment and her subsequent progress under the aegis of the British, the city grew from a collective settlement of three villages to a bustling, prosperous city.[4] Calcutta, being the seat of British activities in India,

became the chief centre of administration, trade and commerce, education and also possessed the country's biggest port. The river port of Calcutta had become one of the major ports in the world.[5] In the British overseas colonial empire, Singapore and Calcutta were regarded as the two most important ports under British control.[6] The British administration realised the need to keep the process of development running in the city of Calcutta to complement all these aspects.[7] Being the seat of British colonial forces, the nascent city of Calcutta received favourable treatment in the form of development modelled on the structure that existed in Britain itself. Calcutta in the nineteenth century was comparable with the most famous European cities of the era due to its grandeur, as well as the modernity it exhibited. The city gradually developed into a burgeoning urban settlement; huge buildings with grand facades built in European style of architecture adorned the city.[8] Since, it was the seat of the mighty British Empire in this part of the world, it enjoyed the rewards of modernity showered on it by the British administration. The colonial administration invested in the construction and development of roadways and thoroughfares. They developed a very effective and modern intra-city transportation structure which in turn hastened the process of urbanisation in this region and helped the growth of Calcutta as a city. The opening of new roads and renovation of the existing ones resulted in the advent of vehicular movement in the form of bigger horse drawn carriages, notably the *Broughams*. In the later years due to the development of roads and for the reason of faster mobility, the indigenous *Palkis* made way for the modern *Broughams* introduced by the British. The urbanisation of the city went hand in hand with the evolution of the surface transport system. Hence, the proper understanding of the phenomenon requires an inquest into the process of development of Calcutta from the three villages. An attempt to trace the entire process of evolution in the mode of surface

transport in the region of Calcutta under the tutelage of the British has been done in this chapter.

The first land and road survey in Calcutta was done in the year 1706, sixteen years after the establishment of the city by Job Charnock, combining the three villages of *Sutanuti*, *Kalikata*, and *Gobindapur*.[9] It was found in the survey that in *Sutanuti*, out of 1692 bighas of land, 1558 bighas were mainly jungle and paddy fields. *Gobindapur* village had in total 1178 bighas land, out of which 1121 bighas comprised of dense forests. During the survey, the village of *Kalikata* was split into two sub-divisions and measured accordingly. One division comprised of 488 bighas, of which 88 bighas were fallow land. The other portion had 1718 bighas, out of which 1472 bighas of land was mainly agricultural, the remaining land was fallow.[10] Out of the combined area of the three villages, the total amount of land was 5076 bighas, out of which 1525 bighas was paddy fields and 486 bighas comprised of gardens. 250 bighas of land was full of banana plantations, while tobacco was cultivated in 187 bighas of land and vegetables were reared in 150 bighas.[11] 160 bighas of land was covered by primitive 'kutcha' roads, small canals, ponds and deeply dug wells. Contradictory statistics come out from the writings of Mr. Holwell. According to him, in 1752, the village of *Kalikata*[12] had 1704 bighas of land, *Sutanuti* had 1861 bighas and 1044 bighas belonged to *Gobindapur*. Another significant fact that emerged from this survey was that there were only two streets and two lanes.[13] No roads or by-lines existed according to the fact-finding survey done by the British. Another survey of the three villages was conducted in 1726.[14] By then, four streets and eight lanes had developed, but there was no sign of any road or by-lane. The third survey was completed in 1742. It was found that the number of streets had increased to sixteen, the number of lanes to forty six and the first trace of a by-lane was found. In fact, by then, seventy six by-lanes were there.[15] When the survey process was again undertaken

in 1756, it was found that twenty seven streets were there along with fifty two lanes; but the number of by-lanes remained the same from the last survey. Until 1756, there was no such thing like a modern road or highway. The streets, lanes, and by-lanes that already existed were typically narrow and 'kutcha', i.e., not metalled. These 'kutcha' roads were not suitable for horse carriages; hence, no such carriages were seen in Calcutta in those days.[16] The main modes of transport which were to be availed off if needed to travel from one village or locality to another were the country made indigenous cow or bullock driven carts and the *Palkis*. People also simply travelled by foot. The first major road in Calcutta was the Circular Road. This road was constructed in 1742 by filling up of the then Mahrattah Canal or Mahrattah Ditch.[17] There is a debate among scholars and historians about the exact date of this road's construction. Some say it was in 1780 whereas according to some, it was made at the end of the century, in 1799. Irrespective of the debate, it inarguably was metalled in 1799, thus becoming a 'pucca' road.[18] Circular Road was the first significant thoroughfare in Calcutta. It was quite prominent in width, fitting the criterion of the European definition of a road. Incidentally, it was also the first 'pucca' road of Calcutta.[19] Its surface was not made of stone chips, but it was laid by using broken brick and mortar pieces. The process of using stone chips in road laying was implemented much later in Calcutta, in 1934-35. The construction of this arterial road in the heart of Calcutta facilitated the usage of horses drawn carriages in the beginning of the nineteenth century.[20] The British administration appointed a Road Surveyor in the June of 1766. However, his appointment did not result in a fast-paced development process of the city roads. Not much was achieved until the beginning of the nineteenth century. The overall condition of Calcutta was quite pathetic. Lord Wellesley was not happy with this scenario. He set up a 'Select Committee' in 1803 comprising of thirty distinguished citizens of Calcutta.[21] The committee was entrusted with a big responsibility to make plans for the

holistic development of Calcutta. The committee was to propose plans to develop the roads and connectivity, improve housing, drainage and sewage system. It was also to make detailed plans to impose regulations on slaughterhouses, cemetery and burial grounds.[22] After much survey and planning, the committee submitted a detailed project report, which the government accepted. However, after Lord Wellesley left India in 1805, those recommendations were not materialised by the concerned authority. As a result, the proposed activities for development did not happen. Between 1815 and 1837, Calcutta witnessed a lot of growth.[23] Between 1805 and 1836, quite a few big roads were built, which would form the basis of surface transportation infrastructure of Calcutta in the later period. Elliot Road, Strand Road (which extended from Prinsep Ghat to Hatkhola),[24] Wood Street, Wellesley Street, Wellington Street, College Street, Cornwallis Street, Hastings Street,[25] Moira Street, Loudon Street, Amherst Street, Hare Street, Colutolla Street, Mirzapur Street, Canal Street, Rawdon Street and Hungerford Street were all built in this era. Apart from these newly made roads, several other already constructed roads like Free School Street, Kyd Street, Mango Lane and Bentinck Street were straightened and widened in an extensive public works project. Apart from this, paths for walking and roads for horse-drawn carriages were built in the 'Garher math' area known as Maidan.[26] These pathways passed through the Maidan making conveyance much easier. These few years also resulted in another crucial step that carried forward the development of the nascent city. The decision to renovate all the roads in Calcutta yearly by spending twenty five thousand rupees and also to convert the 'kutcha' roads to 'pucca' roads was a significant step. The 'Fever Hospital and Municipal Enquiry Committee' was set up in 1837 and its president was Sir John Peter Grant.[27] Apart from their work in the fields of medicine, hospital, and diagnosis, this Committee also made recommendations to Lieutenant Abercrombie regarding the development and renovation of the roads of

Calcutta.[28] Abercrombie egged on by the committee, made a detailed plan on this issue but could not make it work due to severe financial shortcomings which subsequently curtailed the grand plan.

The second road regulation in 1848 specified that older or existing narrow roads would have to be demolished to make way for bigger, broader and straighter thoroughfares. The roads that would be used by vehicles needed to be at least fifty feet wide, whereas the others which would not be used for vehicular traffic was supposed to be twenty feet wide. But this regulation was annulled in 1852. The only outcome of this incident was the creation of the long Halliday Street extending from Colutolla Street to Mecchobazar Street in 1856-57.[29] This particular street is no longer visible in the present city of Kolkata. It is now a part of the Central Avenue and cannot be identified separately. Another spate of road development and extension happened in the years starting from 1863 to 1880. Free School Street was extended till Dharamtala Street in 1864.[30] Canning Street was constructed in 1865, Beadon Street in 1868, Grey Street, in 1873. The last couple of roads were initially planned in the failed plan of Abercrombie. The total combined distance of roads in Calcutta was 181.5 miles in the year 1888. Out of this, 34.5 miles were sewers and ditches which were basically narrow lanes made from filling up of open high drains. The two laws of 1888 specified that the area lying to the east and south of the Circular Road would become part of Calcutta itself. This included Entally, Beniapukur, Tangra, Topsia and the salt marshes in the east and in the south and south-western side, namely Ballyganj, Bhawanipore, Chetla, Alipore, and Kidderpore.[31] In order to make these suburbs a part of Calcutta, several roads had to be built. They were Lansdowne Road, Harish Mukherjee Road, Hazra Road, Chetla Central Road, Judges Court Road, Gopal Nagar Road, Sabji Bagan Road, Kali Mandir Road, Hastings Park Road, Woodburn Park Road, Jagannath Dutta Street, Gas Street and the Upper Circular

Road-Gas Street link road.[32] In 1912, the Calcutta Improvement Trust (CIT) was born as an outcome of the Calcutta Improvement Trust Act of 1911.[33] After the birth of this new Trust, many other major arterial roadways were built that connected the northern portions of the city with the south fringe areas and also the eastern peripheral regions with the western localities. Russa Road was constructed, which extended from Elgin Road to Tollyganj. From Chowringhee Road to Shyambazar, a bunch of connecting roads were built which are known in present day Kolkata as the Chittaranjan Avenue, Jatindra Mohan Avenue, Girish Avenue and Bhupen Bose Avenue. Three other roads in the southern fringes of the city were also built. These are known in present day Kolkata as the Southern Avenue, Rashbehari Avenue and Syed Amir Ali Avenue. It is interesting to note that the use of asphalt was not prevalent in Calcutta in 1910. It was only in the mid-1920s that materials like asphalt, bitumen and coal tar were used in constructing roadways for the first time. Mechanised road building was also first seen during this time when heavy rollers laid the surface of the roads. The British administration continued this mechanised process of road building till they stayed in India. During their reign, almost 140.5 miles of the road surface was re-laid in the city of Calcutta by using these modern raw materials.[34] This was a long process which took a considerable amount of time. Considering the condition and nature of the available roads, the British adopted the *Palki*, the existing indigenous mode of transport in the initial stage of their colonial consolidation.

Palki or palanquins has been used as a medium of transport in Bengal and India from much earlier times. Another indigenous vehicle was the *Doolee*, which was somewhat similar to *Palki*.[35] Both of these were meant to carry a single person. Two specific classes of people of the 'Dule' and 'Bagdi' castes who carried the palanquins and the *Doolee*s. The later needed fewer people to carry it, being lighter in weight than

palanquins and hence saw more usage for being an economical option. The use of *Doolee* or *Duli* in Calcutta was not heard of; on the other hand, palanquins were used here traditionally even when the colonial development was shaping the city from the former villages. Members of the elite class of Calcutta preferred the *Palki* as their primary vehicle of conveyance.[36] At the end of the eighteenth century, the first instances of horse drawn carriages were found in the British community; at the same time, *Palki*s were also in vogue. Quite interestingly, with the advent of horse drawn carriages in Calcutta, the number of palanquins did not dwindle initially; instead, it maintained its standing and was even used by many Europeans during the early years of colonisation. High ranking officials of the East India Company maintained a tradition of having a *Palki* for personal use and a personal butler to demonstrate their rank and social status.[37] They did not allow their subordinates and junior Company employees to maintain similar things in order to keep the status and hierarchy evident and intact. However, in spite of this prohibition, most of the Company officers, irrespective of ranks, owned *Palkis* and employed personnel to serve them. Even after the arrival of horse-drawn carriages, palanquins were still noticed in some quarters of the British community.[38] There are also exceptions to this. David Hare never used horse-drawn carriages; he preferred the 'desi' (native) *Palkis*.[39] Among the Bengali intelligentsia, Ishwar Chandra Vidyasagar always used *Palkis* to move from his rural homeland to the central city. There was a long-standing tradition among the womenfolk of Bengali high society to take bath in the Ganges while sitting in palanquins, to maintain the veil of secrecy which was the prevalent social norm in those days. The *Palki* bearers would submerge the *Palki* in river water while the women sitting inside would take a bath, without having the need to venture outside.[40] This highlights the social tradition and custom of that era and it refers to the 'purdah' system that existed in the Bengali society of that era. Initially, the *Palki* bearers in Calcutta were

mainly Bengali people. Sources point to the fact that Maharaja Nabakrishna started the tradition of hiring residents of the Orissa region as bearers, a tradition that existed till the decline of *Palkis*. This practice started in the year 1767. Later, they were replaced by Hindi speaking residents of North India. It did not remain restricted as the primary personal vehicle of the elite class. Soon, people started to own *Palkis* and used them to generate income, as the need for mobility inside the city emerged with the growth of offices, trade establishments, markets, educational institutions and so on.[41] From being viewed as a symbol of luxury, opulence and aristocracy, the *Palki* became a personal mode for the commoners also, who were able to afford the fare.[42] There were designated spots for *Palki* stands in Calcutta where one would go and hire *Palki*s from the *Palki* bearers, who in turn were employed by their respective owners.[43] The British usually employed the Hindi speaking native bearers for their own *Palkis*. Due to the continuous influx of people from Orissa and North India who became bearers, the Bengalis who were engaged in this profession gradually fizzled out. The monthly wage of a *Palki* bearer was four rupees. However, according to another source, in 1850, a Hindustani *Palki* bearer earned four rupees but an Oriya bearer got a monthly wage of five rupees. Interestingly, it usually required six Hindustani bearers to carry a single *Palki*; on the other hand, five Oriya bearers were able to carry one *Palki*. The daily expense of a rented *Palki* was one rupee and four annas. A rented *Palki* needed more maintenance every month than one owned by any individual; thirty seven rupees was the cost in the former case, while the latter only required twenty five rupees per month. The total number of *Palki* bearers in Bengal in that year was 11500.[44] In 1891, the number of *Palkis* that operated in Calcutta was 606 and the number of bearers was 1614. There were some minor structural differences between a rented *Palki* and a personally owned *Palki*. Personal ones were bigger and slightly more stylish in appearance. Their floors were made from thin bamboo

sticks which were interwoven.[45] On top of that, there used to be a cushion for sitting and pillows on three sides providing a very comfortable sitting arrangement. The rented ones did not have all these and were usually less comfortable. There were instances of the Bengali elite spending up to three thousand rupees to build a proper *Palki* that met all their requirements. They would use specially requisitioned *Palkis* which had designed interiors and exhibited a fashionable appearance. *Palkis* were also used for long-distance journeys from Calcutta, so it was a medium of both intra and inter-city travel. The male members of the Bengali elite used *Tonjon* or *Tanjam*, a variation of *Palki* which looked similar to the *Sedan chair* that was prevalent in Europe.[46] It was a wide and open variation of the *Palki*.

The *Palkis* of earlier times looked different from the later ones, which were somewhat roughly box-shaped. Surgeon Ives provided an apt description of it in his writings. He described it as a covered machine that had cushions inside and had an arch in the middle to make it airier and more comfortable for the people inside. Four to six men carried it. The enterprising French traveller, Tavernier gave a more intricate and minute description of these vehicles.[47] The *Palkis* used by the British were more or less similar to their Indian counterparts, with some modifications in their structure.[48] Tavernier said that the British *Palki* was a type of bed, six to seven feet long and three feet wide with a protective railing all around. The cover of the vehicle was made of satin or brocade and it was supported by a cane or bamboo structure that was bent to make an arch.[49] There would be an attendant walking alongside the vehicle; whenever the sun was up, the attendant would lower the covering to protect the passenger from the scorching tropical sun of Calcutta. It was the general norm for another attendant to be there, walking beside the vehicle. This kind of *Palki* had bamboo poles attached to both sides of its body, joined in a Saltire or a St. Andrew's cross. Each of these bamboo poles were five to six

feet long and were carried by the bearers.[50] The bearers stood in alternative positions; one would carry on his left shoulder and the other on his right and so on. They were efficient workers who walked pretty fast and at an orderly pace. This enabled a smooth and comfortable journey for the traveller. In his work, Tavernier praised the efficiency of the bearers by saying that the travellers reached their destinations in a much shorter time than what it usually took for the chairman of Paris to reach his destination.[51] The British East India Company viewed the *Palki* as a symbolic vehicle of Eastern luxury that oozed prestige and status.[52] As mentioned earlier in this chapter that the Company's junior officials were forbidden to own these vehicles. There were strict orders from the leadership that junior workers were not even allowed to hire a *roundel*-boy, whose duty was to walk around his master and protect him from the scorching sun by holding the *roundel* (umbrella) on his head. A young employee interestingly found a way out of this. He modified the round-shaped umbrella and made it square-shaped. Thus, the roundel became *squared*.[53] He then announced that the Company had issued no orders on the prohibition of *squared*.[54] Quite significantly, *Palkis* also had many disadvantages that overshadowed its status as a vehicle of luxury and prestige. In order to enter it, a passenger had to move backward. Men did it standing and at that time, the bearers would take down the *Palki* from shoulders to their forearms. But it became a problem for women to do this, as their skirts made it difficult.[55] Hence, the bearers would lower it and place it on the ground. There was hardly a small gap of three to four inches between the lower side of the *Palki* and the ground. The women faced difficulties to sit inside, then placing their feet inside and then finally carefully covering up their skirts to protect their modesty. The process was quite tedious and many fashionable British ladies felt it to be detrimental to their dignity. In the later years, these vehicles were modified.[56] A roof was placed, sides were erected and sliding panel doors installed. These modifications replaced the awning

and the draperies that once adorned the *Palkis*. The upholstery was made similar to that of horse drawn carriages and the paint and varnish were made in a similar style like the carriages as well. *Sedan chairs* were brought from England for introduction in Calcutta and the *Tonjon*,[57] a chair with a movable hood, became very fashionable and popular. The latter was used by Lady William Bentinck during her years in Calcutta when her husband was the reigning Governor-General of India from 1828 to 1835.[58] It was a tradition to hire a 'chobdar', a mace-bearer, whose responsibility was to marshal the procession when his employer travelled or rode in his *Palki*. The 'chupprassies' accompanied them as their bodyguards. The *Palki* bearers were also there working on a monthly wage of thirty rupees along with the 'mussalchees'. These 'mussalchees' were torch-bearers who were supposed to run swiftly with blazing torches in their hands in front of the vehicles in which their employers were travelling. They were very agile and possessed great speed. They would run at an average speed of eight miles per hour in front of those vehicles. These customs soon became a symbol of British aristocracy and supremacy in the early days of colonial rule in Calcutta, when no other mode of surface transport was available in this developing city.[59]

While the *Palki* was prevalent in Calcutta as continuation of a long-standing Bengali tradition[60], the British gradually brought their own horse-drawn vehicles to Indian shores. Although the first horse-drawn carriage was seen in Calcutta in the year 1724 (way before the Battle of Plassey) when the then President of Fort William, Mr. Dean used one,[61] it took a long time to become the mainstay of surface transport in the city. Initially, as the road infrastructure was being built in and around Calcutta by the British East India Company, the resident foreigners utilised the services of the indigenous *Palki*. But as roads were getting built that were able to let horses traverse on them, the British population brought their trusted horse-drawn carriages for faster mobility within

the city limits. In the resident British community of Calcutta, many horse drawn carriages were available. Among them, five kinds of carriages were most popular. They were namely C*hariot*, *Brownberry*, *Buggy*, and two varieties of *Palki-gharries*.[62] The *Chariot* was bigger in size and also expensive to maintain. It was used by the Governor, the provincial administrator, judges, high ranking government officials and doctors. The female members of their respective families would go to the 'Garher math' or the Strand Road riverfront in the evening to enjoy the cool river breeze in their *Chariot*s. Apart from the horses drawing the carriages, two other servicemen accompanied the *Chariot*s; the 'coachmen' drove the horses and the other, the 'footmen' stood on the pedestal and looked after the travelling members. The 'coachmen' was colloquially referred to as 'coachwuan'.[63] The *Palki-gharries* had a door and were driven by two horses.[64] Apart from the coachmen, there were two footmen for each carriage. The latter would run beside the horses. The number of these people was usually equal to the number of horses for each carriage. The small *Palki-gharries* did not possess a full-fledged door; it had a half door similar to that of an indigenous palanquin which was removed by pushing. A single horse would drive this carriage, and it had one footman, the setup did not require any driver or coachmen. A *Brownberry* was a based on the structure of a palanquin, but without the bearing handles.[65] It was fitted on four wheels and drawn by a single horse. A single footman was required to operate the *Brownberry* without the specialised assistance of a driver. There is quite a fascinating piece of history behind the emergence of *Brownberry* in Calcutta. In 1827, the Oriya palanquin bearers had staged a strike. Before that, there were numerous complaints of misbehaviour by the bearers with their passengers regarding the fare. This happened primarily because of the absence of any centralised control or regulation on them. The administration finally intervened and proposed a set of regulations. The bearers would have to charge standard fare, stipulated

by the administration. They would have to affix the number specified by the government to their palanquins and also attach a number plate or badge on their hands. They refused to wear those badges because they felt wearing those would result in losing their religion. The administration was also not ready to bend the rules. One day, the agitating Oriya bearers gathered at Dharamtala to stage a protest by refusing to go to work.[66] They stated that if their demands were not met, they would go back to their native villages leaving their profession. The strike left the transport system in complete jeopardy. In this scenario, a British resident of Calcutta, Brownlow provided a solution to the problem while the administration was finding ways to end the stalemate. He removed the handles of his palanquin and placed it on a four-wheel structure and then attached a horse to pull it forward. Thus, in the most bizarre way, the *Brownberry* carriage started its journey in Calcutta in the year 1827. The fifth carriage called *Buggy*[67] was a covered carriage with an overhead roof. A British individual who lived in Coolie Bazaar (modern Hastings) of Calcutta was the man who created the *Buggy*. He combined the *Brownberry* with a *Palki-gharri* creating a hybrid kind of a carriage in 1875-76. The designing of this carriage proved to be quite costly. It was renamed *Greenfield* after the name of its creator and inventor. Apart from these, *Office jaun* was another kind of carriage used by the British officials and their Indian subordinates.[68] In 1827, *Hackney* carriages was brought to the burgeoning streets of Calcutta.[69] This carriage was developed in a situation similar to that of the origin of the *Brownberry*. The red coloured carriages were demarcated as third class, whereas the black coloured ones were earmarked for the second class. Another significant carriage was the *phaeton*, classified as a first-class carriage. The *Victoria* was another carriage that had the facility to fold its roof or shade like the *phaetons*. Various other types of carriages became prevalent on the streets of Calcutta, revolutionising the sector of surface transport. The *Landau*, *Landaulet*, *Barouche*, *Gig* were all examples of

the technological development that the British brought to their colonial bastion of Calcutta. The *Hackney* carriages stayed the longest on the streets of Calcutta.[70] The wheels of those carriages were layered with iron. The use of rubber tires began in the year 1900. Towards the end of colonial rule in India, a completely charted fare system of carriages existed in Calcutta. The fare was decided based on two factors: time and distance. For first-class carriages, the fare was roughly eight annas for a mile and after that, six annas for each mile or portion of a mile.[71] Based on time, the fare was eight annas for fifteen minutes, one rupee for thirty minutes, and so on. It was six annas for second class carriages for a mile and four annas for a mile or portion of a mile when the distance was exceeded. Based on time, the fare of a *Phaeton* was six annas for fifteen minutes, twelve annas for thirty minutes, etc.[72] Whereas, the fare of a *Brownberry* based on time was eight annas for thirty minutes, fourteen annas for an hour, and so on. The carriages which were classified in the third class had fares of three annas for a mile and six annas for thirty minutes as their starting rate.

It will be quite difficult to give a minute description of all the varieties of carriages that ere prevalent in Calcutta in the colonial period. However, it will be comparatively easy to mention the leading features that distinguished or rather differentiated one from another. The chief carriage of all was the *Coach*. A *Town coach*[73] was constructed with C springs and under springs, hammer-cloth seat, Salisbury boot and hind standards. The colours were decided according to the individual choices of the owners. A *Coach* was simple in design and did not have the under-springs like the former had. It had a platform in the front and a boot behind and the entire structure was suspended on the C springs. A *Landau* was somewhat similar to the C*oach*, the main distinguishing feature being the jointed head that was opened occasionally. The two S shaped brackets formed irons that appeared on the upper quarters; they were joined levers for the purpose of holding the

head firmly together when closed. It also had a framed driving seat with a guard iron to this carriage. A *Driving coach* was a vehicle which was once used by the quintessential British gentlemen who were fond of leisure driving and attending horse carriage races. The perch was short and straight and the wheels nearer than it was in ordinary coaches.[74] The carriage was meant to carry two on the driving box and two on the seat behind, six on the roof and another four, fourteen passengers in all totality. It also had good space for carrying luggage making it one of the biggest carriages ideal for families travelling over a long distance. This particular carriage, as is evident, was not used that much for the purpose of intra-city commutation in Calcutta. But it also had an advantage. It was possible to transform this into a *Landau*. A *Town chariot* was regarded as a dress or court carriage when it was highly decorated and ornamented. The French called this a *coup'e*[75]. It had the coach cut down into sections, a portion of the fore cut away and only one seat left. By some tinkering and modifications, it was possible to transform this into a *Post chaise*. A *Post chaise* or a *Posting chaise* was a carriage without under-springs, with a swinging fore and a hind end, passengers and luggage were borne on the structure of the C springs.[76] The hind end of this type of a carriage had a pedestal or rather a boot for two servants and at the fore end, there was a platform to carry a trunk inside and there was an imperial on the top. The lamps were black and shifted to hide the glass in broad daylight. A *Landaulet* was more or less similar to a *Landau*. In fact, it can be described as a smaller and somewhat miniature version of the grand *Landau*. It also had more or less similar features like its mother carriage. A *Britzschka chariot* could be differentiated from an ordinary *Posting chariot* by the form of its body. It was a very unsymmetrical carriage; its lower lines were curved that did not have any grace whatsoever.[77] The lower part did not harmonise with the upper part at all. But it was a convenient carriage for travelling in the road conditions of Calcutta and its peripheral areas. It also came in handy while

travelling for a long distance at night. There was enough space for the travelling passenger to lie down and take some rest and even get some sleep. A light *Posting chariot* would sometimes be constructed on elliptical springs. The carriage was lightweight but the curved form of the body did not gel with the elliptical springs underneath. Thus, it did not exhibit a graceful design, it was more of a working design. This was the kind of a carriage which looked like as if it belonged to either a bachelor or a sportsman. It was not considered as suitable for family travelling.[78] It was quite fast due to being drawn by a pair of horses and had the reputation of covering distances in small time. A *Barouche* was a very fashionable carriage used by the British in Calcutta. The body was similar to the build of a C*oach* but did not have the roof. It was predominantly a town carriage, ideal for short distance within the city limits. It did not have a proper seating arrangement travelling to provide comfort for journeys that traversed long distances. The driver's seat was similar to that of a *Landau* and thus the coachmen and footmen had to sit together. It had a very graceful design compared to other carriages of that era, though it had an eye-catching defect. The hinder quarter was black and hence appeared smaller than the front damaging the design symmetry though in reality both were same in size. A *Barouchet* was again like a *Landaulet*, a smaller version of the *Barouche*. It was a light carriage, very small in size and was built to be drawn by a single horse. The design of this carriage was not considered to be graceful by the architects of horse-drawn carriages. It is said that the first German *Britzschka* was brought to England by the Earl of Clanwilliam, who chose it for its lightweight frame. This modern carriage was subsequently brought to Calcutta by the British during their colonial reign. The coachmen and mechanics subsequently termed it as *Brisker* or *Brisky*. The German version of this carriage was comparatively lightweight with room for three passengers and a little space to keep luggage. Wheels were low but it never caused much of a problem. In spite of some

manufacturing defects in the fore part, this carriage had a pleasing appearance. A double bodied *Driving phaeton* was in vogue in the British community of Calcutta. But it was surpassed by the popularity of the *Britzschka*. Although the design was not eye catching, but it was a convenient carriage for travelling. It was light and had equally proportionate large wheels. It was generally used in Calcutta by people who drove their own carriage without the assistance of any coachmen or footmen. This carriage was more of a personalised type of vehicle. A *Phaeton* belonging to the same class of carriage was much in vogue. It did not have a perch and was based on elliptical springs. It was a light carriage with comparatively less noise made during its travelling. This carriage was one of the simple modes of four-wheeled vehicles that were used in those times.[79] It was used on a large scale on the streets of Calcutta as they were comparatively easy to maintain. *Pony phaetons* of a *Cabriolet* form was also a very popular horse-drawn carriage for a certain amount of time.[80] They were intended for two people, one who drove it and a boy who would ride as a 'postilion' if required. The appearance of this carriage exhibited apparent lightness but in reality, it was not much lightweight. These carriages were primarily used by the English ladies for their evening stroll or outing near the riverfront. A *Britzschka Phaeton* was made on more or less the same principle and mechanism of a *Phaeton*. The body was a modification of the original *Britzschka*. The design was soothing to the eyes. The seats were constructed in such a way that they could be shifted according to the needs of the driver or the passenger. Two persons sat in the front, two or four in the behind and the head was closed or opened according to their needs. A *Cabriolet Phaeton* was constructed on elliptical springs without a perch. It saw a lot of use on the streets due to its convenient handling and maintenance.[81] Another variant of this was found which was based on C springs with double lever springs in the front. The old one-horse drawn *Chaise* or *Whiskey* was as heavy as the modern *Cabriolet*, but lacked the latter's grace or form.

The carriage which was called *Gig* was one of the lightest single horse-drawn carriages used in the British Isles and in their overseas colonies. It was simply an open railed chair, fixed on the shafts and supported on two side springs. The hinder ends were connected to the loop irons by leather braces to allow more freedom of motion. The wheel and body of this carriage was higher than the *Stanhope*. Another carriage called *Curricle* was the only two-horse driven vehicle that had one horse abreast.[82]

The most important of all these carriages was inarguably the *Brougham*, which was named after Lord Brougham of England.[83] It exhibited an aura and became a symbol of British colonialism and imperialism in Calcutta. The *Brougham*, considered one of the best technological inventions in early modern surface transportation, was a light, four-wheeled horse-drawn carriage. It had an enclosed body with two doors, similar to the rear section of a *Coach*.[84] It had a seating arrangement for two passengers. Sometimes an extra pair of seats in the front corners accommodated two more. A further box seat was located in the front for the coachmen and the footmen. It had a vitrified or somewhat glazed front window to enable the passengers to look forward. The fore-wheels were strong and capable of turning forward. A variant of this vehicle subsequently emerged. It had a collapsible top and the rear doors turned backward. This version was called B*rougham-Landaulet*.[85] The original *Brougham* carriages had sharply squared rods at the back. Their body line curved forward to merge at the base of the enclosure. The body also had low entry to the enclosure, using only one outside step below the door.[86] The introduction of *Brougham* carriages in Calcutta can be called a watershed in the history of surface transport of the city. As with the arrival of this modern vehicle, Calcutta witnessed the latest technological invention in the sector of transport that has given the British urban settlements a greater scope of mobility. Calcutta also received her share of this modernity for being the seat of British power in the Indian subcontinent. The *Brougham* not only

provided faster mobility, but also had luxurious interiors in comparison to the other carriages and hence became the mainstay of the British East India Company. The officials chose it as their personal vehicle of conveyance for all the advantages it provided. The advent of these carriages also very significant as it symbolised an era of far-reaching changes in the transport system of Calcutta. A city which in the early days saw manually operated *Palkis* on the unpaved roads was now testament to the movement of the *Broughams* in all their grandeur. The fact that the *Brougham* was popular in the British quarters can be ascertained from the inventory of the Dykes & Co. They manufactured both *Broughams* and miniature *Brougham* carriages.[87] G. C. De & Co. of Taltollah, a Bengali carriage manufacturing company was often employed by the Chief Paymaster of East Indian Railway, R. Battersby to carry our periodic repair and maintenance of his personal *Brougham*. Similarly, another British owner of a *Brougham* carriage, A. B. Struthers used to visit G. C. De for similar purposes.[88] Though from a technological viewpoint, *Broughams* signified the transition from primitive manual modes of transport to developed vehicles, but it itself never become the people's choice for their conveyance. It remained primarily as a vehicle of personal use by high-ranking Company officials and allied personnel. It did not become a commonly used vehicle like the other forms of carriages which were comparatively economical to build and maintain. It also did not appeal much to the fascination of the native elite who preferred the *Palki* for its traditional image. So, for common people and public mobility, *Palkis* were replaced by fast moving horse-drawn carriages, but in the higher echelons of the society the former preserved its status to a large extent till the advent of automobiles in the twentieth century.

With the growing popularity for all of these horse-drawn carriages, there was a need for setting up of local manufacturing units to supplement the demand.[89] As a result, manufacturing of the same started in Calcutta. Some of the notable names in carriage

building were A. George & Co., John Cameron & Co., Eastman & Co., E. D' Souza, J. Somerville, Winsor & Co., G. Smith, C. A. Smith, J. Gregory, John D' Souza, Collins & Co., Steuart & Co., J. Carr & Co., etc.[90] The oldest and most famous was the Steuart & Co. They initially had their factory at Old Court House Corner from 1873 to 1907. In 1907, the Company shifted its factory to Mango Lane, where it stayed till the year 1930.[91] In 1930, it again was shifted to the junction of Free School Street and Park Street. After 1930, a new factory premise was built at Ballyganj on a plot of land measuring 16 bighas. The Company was known for its various types of horse-drawn carriages. They manufactured *Chariot*, *Buggy*, *Phaeton*, *Landau*, *Office jaun*, *Victoria*, M*ail coach*, *Brownberry*, and *Brougham*. They were also known for their customised line of products which they offered to the British community, the native aristocracy and the elite class. They built *Palkis* for the sons of Tipu Sultan, a specially ordered *Palki* for the king of Tanjore which allowed the passenger to sleep or take rest completely lying down in the moving vehicle. Dykes & Co., which was based initially at Old Court House Street was also known for their carriage making. Later, they shifted their base to Waterloo Street from where they did business till the year 1924. Thomas Meredith was also a famous carriage manufacturer based on the Meredith Street of Calcutta. We also see the emergence of Bengali manufacturers in the carriage building industry of Calcutta in the nineteenth century. U. N. Banerjee & Co. of Taltollah was known for their manufacturing of horse carriages. They also used to run a repairing workshop for carriages at their establishment. Also, G. C. De Co., another Bengali owned firm manufactured and repaired carriages. Apart from the manufacturers, some other people and companies worked as 'livery stable keeper'.[92] They maintained horse stables and carriage sheds. Many British and Anglo-Indians never owned carriages or horses; they would come and hire them from these places. On the other hand, many had personal carriages and horses

which they were unable to maintain. They handed over these horses and carriages to the maintained stables, which provided maintenance for a considerable charge.[93] Owners outsourced their responsibilities. Some notable livery stable keeper in Calcutta were Cook & Co., Hunter & Co., Hart Brothers, and Milton Co.[94] The Hart Brothers was perhaps the most significant among all these agencies. They had a huge horse stable that extended from Prinsep Street in the north to Dharamtala Street in the south and Hospital Street and Temple Street in the west. The Hart Brothers also had another horse stable in the Ballyganj area, the area which is now known in Kolkata as the Mandeville Gardens. Thus, from the extensive plot of land of their stables, it can be understood how big and prosperous their business was. Milton Co. had their horse stable at Dharamtala Street. They were known for their specialised carriages made for brokers which came to be known as the *Brokers' carriage*. This particular kind of carriage did not have any pedestal to stand on, or rather it did not have any door to facilitate the swift movement of the brokers locally called 'Dalal'. They did not have time to open doors, step on the pedestal and then get down since they were always in a hurry due to their line of work. After the First World War, Milton Co. followed the footsteps of the Steuart Co. and diverted from carriage making to automobile manufacturing. There was a time when this Company also supplied cattle fodder and food for horses.[95] Several other companies and firms also existed which auctioned horses and carriages such as Cook & Co., Hunter & Co., Thomas Smith & Co. Cook & Co. was the leading firm in this field.[96] The owner, Cook, was a veterinarian who treated horses. Thus, he had efficient knowledge in this field. Apart from auctioning horses and carriages, they also served as livery stable keeper. In 1877, when Queen Victoria came to India acting on Lord Lytton's proposal to declare herself formally as the Queen of India, many carriages were required for all the dignitaries attending the gala ceremony. It was Cook & Co. who supplied forty carriages and eighty horses for the

special occasion. All these were sent on a special train from Calcutta to Delhi.[97] There was a company by the name T. F. Brown & Co., located in Dharamtala Street which rented out first-class carriages like *Barouche*, *Phaeton*, *Buggy*, etc. They also rented out horses to the ordinary people at a reasonable rate. A significant feature of the British life in Calcutta was the number of natives they hired as their servants fulfilling different duties of their employers.[98]

Initially, there were few horse-drawn carriages in Calcutta due to the lack of proper roads in the early years of colonial rule. The scenario improved as the British East India Company engaged in developing the road infrastructure of the city. Newer roads were built and as a result, the number of horse-drawn carriages increased proportionately. The French traveller, M. Grandpr'e wrote in 1790 that *Palkis* were no longer the exclusive vehicle in Calcutta. There were numerous carriages like *Chariots*, *Phaetons*, *Whiskeys* that operated in Calcutta, creating the hustle and bustle that reminded him of any major European city. He also noticed the presence of many saddle horses, some of which belonged to the beautiful Persian breed of horses.[99] No Arabian breeds were found except a few small ones called 'pooni'. They were used to run the *Phaetons*. The name *Whiskeys* that was given to a particular kind of horse-drawn carriage was in all probability not correct; the correct alternative was *Britzschka*, a name that became utterly obsolete in the later years. It was somewhat of a hybrid between a *Barouche* and a *Phaeton* and was considered a very fashionable ride or mode of conveyance in those days in the city of Calcutta. In 1844, an article was published in the Calcutta Review. The author of the article made a comparison between the then Calcutta and what it was half a century ago.[100] He explained that the growth of Calcutta was largely due to the excellent surface transportation system that has been built in the colonial regime. He described jubilantly how the streets full of *Britzschkas*, *Barouches*, *Chariots*, *Phaetons*, *Buggies*, *Palki-*

gharries, *Brownberries,* and *Crahanchys* resembled any modern European town.[101] By then, the carriages had become the new symbol of elitism; they had become a common sight in Calcutta. Much rivalry was there in the British community in Calcutta regarding these vehicles. A competition would go on between them when it came to decorating their carriages. The *Chariots* were the most sought-after among all the carriages as it oozed royalty. They had great in-built spring, deep bodies and excellent quality hammer-cloth with a silver-mounted harness. The coachmen would be dressed in flat disc-like turbans with crested bands across and full 'cummerbund' or waist-cloth. The running footmen had 'chowries' which were fly-whisks of yaks' tails, mounted on silver handles and were slung across the shoulder. Every young lady belonging to the Anglo-Indian community in Calcutta desired to own a fine, gorgeous carriage of her own. Any bachelor who owned such a vehicle were considered as the most eligible to marry beautiful young ladies of the community. This type of carriage was famously and rather quite amusingly named as 'wife-trap'.[102] A humorous story can be found in the Calcutta Gazette dated 15th March 1787.[103] The story is of a gentleman with a fine carriage, who was also known for his gallantry. He went up to a young lady and asked her opinion on his 'wife-trap'. The lady appreciated the carriage and the gentleman asked whether she also liked the 'bait' who owned it. Such a story reflected the cultural and social customs, that became prevalent in in the British quarters of Calcutta as a result of the advent of these modern forms of surface transport.

References

[1] Robert Ivermee, *Hooghly: The Global History of a River* (Noida: HarperCollins Publishers, 2021), 63-92.

[2] Daniel R. Headrick, *The Tools Of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981), 180-86.

[3] Daniel R. Headrick, *Technology: A World History* (New York: Oxford University Press, 2009), 108.

[4] Sumanta Banerjee, *The Parlour And The Streets: Elite and Popular Culture in Nineteenth-Century Calcutta* (Calcutta: Seagull Books, 2019), 22.

[5] Henry T. Bernstein, *Steamboats On The Ganges: An Exploration in the History of India's Modernization through Science and Technology* (Calcutta: Orient Longman, 1960), 22-35.

[6] John Bach, *A Maritime History of Australia* (Melbourne: Thomas Nelson and Sons, 1976), 14.

[7] Krishno Dhar, *Kolkata Teen Shatak* (Kolkata: Paschimbanga Bangla Academy, 1989), 11.

[8] Raja Binaya Krishna Deb, *The Early History and Growth of Calcutta* (Calcutta: Romesh Chandra Ghose, 1905), 36-40.

[9] Sumanta Banerjee, *Memoirs of Roads: Calcutta from Colonial Urbanization to Global Modernization* (New Delhi: Oxford University Press, 2016), 1-3.

[10] Ibid.

[11] Radharaman Mitra, *Kolikata Darpan* (Calcutta: Subarnarekha, 1952), 166.

[12] *Proceedings of the Government of India, Ministry of Education Department*, A2 Branch, 1947 (New Delhi: National Archives of India), File No. 4-47.

[13] Mitra, *Kolikata Darpan*, 166-67.

[14] Ibid.

[15] Ibid.

[16] Sripantha, *Kolkata* (Kolkata: Ananda Publishers Private Limited, 1999), 66.

[17] Ranabir Ray Choudhury, *A City in the Making: Aspects of Calcutta's Early Growth* (New Delhi: Niyogi Books, 2016), 371-73.

[18] H. E. A. Cotton, *Calcutta Old And New: A Historical & Descriptive Handbook To The City* (Calcutta: W. Newman & Co., 1907), 128.

[19] Sripantha, *Kolkata*, 32.

[20] Ibid., 66.

[21] S. W. Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth* (Edinburgh: T. And A. Constable, 1916), 257.

[22] Ibid.

[23] C. A. Bayly, "Indian society and the making of the British Empire." In Gordon Johnson, ed., *The New Cambridge History of India Vol. 2* (Cambridge: Cambridge University Press, 1998), 71.

[24] Ranabir Ray Choudhury, *The Shaping of Modern Calcutta: The Lottery Committee years, 1817-1830* (New Delhi: Niyogi Books, 2022), 266.

[25] Pradip Sinha, *Calcutta In Urban History* (Calcutta: Firma KLM Private Ltd., 1978), 29.

[26] Mitra, *Kolikata Darpan*, 40-58.

[27] *Proceedings of the Government of India*, *Home Department*, Judicial Branch, March 1844 (NAI), File No. 24.

[28] A. K. Ray, *A Short History of Calcutta: Town and Suburbs: Census of India, 1901, Volume VII, Calcutta, Part I* (Calcutta: Bengal Secretariat Press, 1902), 73.

[29] Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth*, 257.

[30] Choudhury, *A City in the Making: Aspects of Calcutta's Early Growth*, 249-56.

[31] Ibid.

[32] Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth*, 236-41.

[33] Partho Datta, *Planning The City: Urbanization and Reform in Calcutta c. 1800 - c. 1940* (New Delhi: Tulika Books, 2012), 222.

[34] Ibid.

[35] Reverend Father James Long, *Calcutta And Its Neighbourhood: History of people and localities from 1690 to 1857* (Calcutta: Indian Publications, 1974), 80.

[36] Sunil Gangopadhyay, *Sei Samay* (Calcutta: Ananda Publishers, 2015), 59-60.

[37] H. E. Busteed, *Echoes From Old Calcutta: Being Chiefly Reminiscences Of The Days Of Warren Hastings, Francis And Impey* (London: W. Thacker & CO., 1908), 123.

[38] P. Thankappan Nair, ed., *British Social Life In Ancient Calcutta (1750 to 1850)* (Calcutta: Sanskrit Pustak Bhandar, 1983), 137.

[39] Ibid.

[40] Sukanta Chaudhuri, ed., *Calcutta The Living* City, Vol- 1: *The Past* (Calcutta: Oxford University Press), 157-60.

[41] Kathleen Blechynden, *Calcutta Past And Present* (London: W. Thacker & Co., 1905), 134.

[42] *Proceedings of the Government of India*, *Home Department*, Miscellaneous Branch, 1774 (NAI), File No. Vol-37.

[43] P. Thankappan Nair, ed., *Calcutta In The 19th Century (Company's Days)* (Calcutta: Firma KLM Private Ltd.), 15.

[44] Mitra, *Kolikata Darpan*, 172.

[45] Ibid., 171.

[46] Ibid.

[47] Jean Baptiste Tavernier, *Travels In India* (London: Macmillan and Co., 1889), 45.

[48] Sunil Kumar Munsi, *Geography Of Transportation In Eastern India Under The British Raj* (Calcutta: K. P. Bagchi & Compnay, 1980), 90.

[49] Ibid., 91.

[50] Ibid.

[51] Tavernier, 46.

[52] Thomas Twining, *Travels in India A Hundred Years Ago With A Visit To The United States: Being Notes and Reminiscences* (London: James R. Osgood, 1893), 53-4.

[53] Mitra, *Kolikata Darpan*, 173-79.

[54] Ibid.

[55] Monkland, *Life in India; Or, The English At Calcutta Vol. II* (London: Henry Colburn, 1828), 195.

[56] Ibid.

[57] Mitra, *Kalikata Darpan*, 172.

[58] *Proceedings of the Government of India*, *Finance Department*, 1835 (NAI), File No. 23.

[59] W. H. Carey, *The Good Old Days of Honorable John Company: Being Curious Reminiscences During The Rule Of The East India Company From 1600 To 1858* (Calcutta: Queens Book Company, 1882), 51-70.

[60] Raj Narayan Basu, *Se Kal Ar E Kal* (Calcutta: J. N. Vidyaratna & The New Bengal Press, 1878), 45.

[61] Douglas Dewar, *In the Days of the Company* (Calcutta: Thacker & Spink, 1920), 92.

[62] Ibid.

[63] Kaliprasanna Singha, *Hutom Pyanchar Naksha* (Kolkata: Ananda Publishers Private Limited, 2008), 101.

[64] Ibid.

[65] Charles Singer, et. Al., ed., *A History of Technology Volume V The Late Nineteenth Century* (London: Oxford University Press, 1958), 431.

[66] Mitra, *Kolikata Darpan*, 172.

[67] Singha, *Hutom Pyanchar Naksha*, 42-3.

[68] Ibid., 48.

[69] Bidisha Chakraborty, and Sarmistha De, *Calcutta in the Nineteenth Century: An Archival Exploration* (New Delhi: Niyogi Books, 2013), 138-43.

[70] Anindita Ghosh, *Claiming the City: Protests, Crime, and Scandals in Colonial Calcutta, c. 1860-1920* (New Delhi: Oxford University Press, 2016), 175.

[71] *Proceedings of the Government of India*, *Home Department*, Judicial Branch, March 1864 (NAI), File No. 14.

[72] Ibid.

[73] Singha, *Hutom Pyanchar Naksha*, 56.

[74] Ibid., 54.

[75] William Bridges Adams, *English Pleasure Carriages; Their Origin, History, Varieties, Materials, Construction, Defects, Improvements, And Capabilities: With An Analysis Of The*

Construction Of Common Roads And Railroads, And The Public Vehicles Used On Them: Together With Descriptions Of New Inventions (London: Charles Knight & Co., 1837), 225.

[76] Ibid.

[77] Ibid.

[78] Ibid., 227.

[79] Singha, *Hutom Pyanchar Naksha*, 42-3.

[80] Adams, *English Pleasure Carriages; Their Origin, History, Varieties, Materials, Construction, Defects, Improvements, And Capabilities: With An Analysis Of The Construction Of Common Roads And Railroads, And The Public Vehicles Used On Them: Together With Descriptions Of New Inventions*, 234.

[81] Ibid.

[82] Ibid.

[83] *Proceedings of the Government of India, Foreign Department*, Miscellaneous Branch, March 1837 (New Delhi: National Archives of India), File No. 323A.

[84] Adams, *English Pleasure Carriages; Their Origin, History, Varieties, Materials, Construction, Defects, Improvements, And Capabilities: With An Analysis Of The Construction Of Common Roads And Railroads, And The Public Vehicles Used On Them: Together With Descriptions Of New Inventions*, 225.

[85] Ibid., 227.

[86] Francis T. Underhill, *Driving For Pleasure: Or The Harness Stable And Its Appointments* (New York: D. Appleton And Company, 1896), 148.

[87] Siddhartha Ghosh, *Kaler Shahar Kolkata* (Kolkata: Ananda Publishers Private Limited, 1991), 153.

[88] Ibid., 154.

[89] *Proceedings of the Government of India, Military Department*, Quarter Master General Branch, 1840 (NAI), File No. 13.

[90] Mitra, *Kalikata Darpan*, 176.

[91] Ibid.

[92] Ibid., 175.

[93] *Proceedings of the Government of India, Home Department*, Miscellaneous Branch, 1909 (NAI), File No. 245.

[94] Ghosh, *Kaler Shahar Kolkata*, 154.

[95] Mitra, *Kolikata Darpan*, 178.

[96] Ibid.

[97] *Proceedings of the Government of India*, *P. W. D Department*, Railway Construction Branch, 1877 (NAI), File No. 17.

[98] Dennis Kincaid, *British Social Life in India* (New Delhi: Rupa Publications India Pvt. Ltd, 2015), 114.

[99] Benoy Ghosh, *Kolkata Saharer Itibritta* (Calcutta: Bak Sahitya Pvt. Ltd., 1975), 239.

[100] *Proceedings of the Government of India*, *Home Department*, Education Branch, 1860 (NAI), File No. Vol/2.

[101] Singha, *Hutom Pyanchar Naksha*, 49.

[102] Ibid., 210-12.

[103] *Proceedings of the Government of India*, *Home Department*, Miscellaneous Branch, March 1787 (NAI), File No. 17.

CHAPTER THREE

The Advent of Trams: A Watershed in the History of Colonial Calcutta

The emergence of Calcutta in the nineteenth century as a burgeoning urban centre of British India is a watershed in her history, as she witnessed a complete transformation from her typical rural background synonymous with the other contemporary places of the lower Gangetic delta region.[1] The city of Calcutta had become the hub of British commercial, military, legislative and administrative activities in India.[2] Under the tutelage of the British colonial administration, Calcutta was growing in importance in the eighteenth century and as an outcome of this, the nascent city went through a thorough process of urbanisation in the nineteenth century.[3] Initially the interiors and the peripheral regions of Calcutta were not so impressive. It primarily consisted of scattered concentrations of villages, extensive areas of agricultural fields and even jungles that occupied much of the city limits, the entire area comprising of these geographical features was known as Calcutta.[4] But a completely different picture could be seen if one travelled towards the banks of the Hooghly, as the riverfront had a fully functioning port with all the necessary infrastructure. And this part of Calcutta connected the city with the rest of the world as the British conducted domestic and international trade and commerce activities from this riverine port.[5] As the port of Calcutta developed with British patronage, her interiors witnessed matching developments also and the rural features started vanishing gradually in the face of urbanisation. The British forces initiated all their colonial ventures in the Indian subcontinent from their base of Calcutta.[6] The process of urbanisation went hand in hand with all these other activities of the colonial forces. The planning and subsequent development of Calcutta as a city was started during the

administrative regime of the British Governor-General of India, Lord Wellesley.[7] By this time the trading activities of the British East India Company had brought economic development to the banks of the river Hooghly. And Lord Wellesley took several measures to maintain this ongoing momentum by making various plans for the overall development of Calcutta. The construction and further extension of major roads and thoroughfares, sewage and drainage systems, public health and sanitation, and beautification of the various important locations were planned as a result of his measures.[8] His reign also saw the beginning of public amenities in Calcutta. All these developments made the new city of Calcutta a place of 'redemption' in the eyes of the people of surrounding regions. People started to move to Calcutta in search of new and better livelihood. Not only the traditionally rich families, but also people belonging to the lower economic strata of the contemporary Bengali society thronged to the new city in this manifestation of mobility.[9] As a result of this mobility, the population of the newly developed city saw a spurt in numbers. According to statistics, the population of Calcutta in 1850-51 was 4,13,182 which later increased to 14,88,323 in the next five decades.[10] Apart from the local Bengalis, we also see the arrival of the rich and affluent Parsis, Portuguese, Jews and the Armenian merchants around this time.[11] Significantly, poor and downtrodden people from Bihar, Orissa and United Provinces also arrived in large numbers in Calcutta.[12] Due to the constant arrival of people to Calcutta, the infrastructure and space of the city needed a complete overhaul to accommodate everyone.[13] Atul Sur has mentioned in his works how Calcutta lacked proper roads in the initial days of colonial rule.[14] The dusty and muddy earth roads were not suitable to support the demands of the daily mobility of a burgeoning city. To remedy this situation, the Lottery Committee was founded in 1817 and one of its chief advisor, G. I. Gordon suggested a widespread construction of the surface transport infrastructure of Calcutta. He proposed building of

several new roads (arterial and major thoroughfares), as well as the construction of pavements or footpaths for pedestrians to walk alongside the main roads.[15] The development of roads and its importance in the growth of Calcutta was emphasised by the colonial administration during the reigns of Wellesley and Lord Auckland. In 1858, efforts were made to construct pavements for pedestrians for their security and to avoid clashes with the growing transport system of Calcutta. By 1875, Calcutta had almost seventy miles of pavements.[16] In the previous chapter of my thesis, I have mentioned how the indigenous *Palki* was the mainstay of surface transport in Calcutta in the eighteenth century and it gradually came to be replaced by better and faster modes of transport. Towards the end of the eighteenth century, animal driven vehicles became the primary mode of transport in Calcutta.[17] While economic development, social mobility and urbanisation were primarily driving the city of Calcutta, the entire India subcontinent was also going through a huge transformation politically. Old and traditional Indian dominos were falling to the prowess of the British and by the second half of the nineteenth century, the invading forces had established a consolidated colonial empire in India. The Great Revolt of 1857 was an eye opener for the colonial power as they realised the need for an efficient network of transport spanning the entire country.[18] The British wanted to create an intricate network of transport infrastructure to facilitate the movement of their troops to quell any kind of future rebellion in any part of the vast country. Calcutta being the base of their operations would be located at the focal point of this newly created network. In this political backdrop, the colonial administration also started massive development in the city itself to support her position as the seat of British power in India. In this chapter, I have continued tracing the emergence and development of modern and better modes of surface transportation in Calcutta and here I have researched on the advent of trams in the city and how this impacted Calcutta and her residents.

The first step towards the establishment of tram network in Calcutta was taken in the year of 1867 when the 'Justice of the Peace', a body that was under the aegis of the then Calcutta Corporation passed the ACT IX.[19] This Act IX enabled them to construct a tramway on behalf of the government or lease out the right to any private company to do the same. Another important step was taken in this regard three years later. The British Indian Government directed the provincial administration of Bengal to provide transportation facilities within city limits to transfer goods from the Sealdah railway station to other parts of Calcutta. The Bengal administration first consulted the officials of the Eastern Bengal Railway and then asked the Justices to provide their opinion on this issue.[20] The Justice regulatory body conveyed to the government that tram lines can be constructed in Bowbazaar, on Strand Bank Road and Bhawanipore.[21] It was also said that trams would run not for the common people but only to serve the commercial interests of the colonial administration and to ferry the personnel associated with these activities. The British Indian Government proposed that the Justice body would have to take responsibility of the construction and maintenance of the tram lines. The Justice body in return proposed that responsibility or liability of any damage to the underground drainage and sewage disposal systems, water lines and private houses would need to be borne by the Government.[22] Such large-scale construction works were prone to accidents due to their sheer proximity with those utility lines. The Bengal administration set up a local committee on an ad-hoc basis to look into this matter and to prepare a detailed project report which was to be submitted to the British Indian Government. The committee eventually published its report on 24th August, 1870 and in March, 1871, the British Indian Government passed its final orders.[23] They declared the introduction of 'street tramways' in Calcutta as they felt its establishment would benefit the city and its people largely and also boost its commercial and administrative activities to a large extent. It was

decided that though the Government would invest in the project, their supervision would be limited to a certain extent and the lines would be regulated by the Justices body. A contingency or a backup plan was also thought of. In case of a refusal by the Justices to accept the above mentioned proposal, they would be given the right to act on behalf of the Government to oversee planning, construction and management of the tramways and after completion, it would be taken over by the administration. The first tram line that was planned was to run from Sealdah,[24] westward towards the river bank of the Hooghly; it was to serve as a lifeline for the trade and commerce hub of Calcutta. The provincial administration of Bengal suggested an alternative, to have a joint task force or a big regulatory committee comprising of the Municipal Corporation, the Port Commissioners and the Railways Department. With the participation of all these departments, the work would be completed smoothly in a much lesser time period. The Justices went through all these proposals and decided to set up the tram network completely under their own control by taking an advance of invested capital from the state; they thought this to be in their best interests.[25] Another committee was again appointed by the Justices in accordance with the proposals laid down by the state. This committee was supposed to make technical suggestions regarding the construction of tramways. They suggested the first line to be constructed from Sealdah to the Hooghly river through Bowbazaar and then the line would meander in the northward direction passing through Armenian Ghat, Aheeritollah Ghat, Shobhabazaar and finally ending at Chitpore Bridge after crossing the municipal railway line at Baghbazaar.[26] The Government finally allowed to construct a tram line from Sealdah to Armenian Ghat on condition that the project cost would not exceed one lakh. The streetcars or tramcars were to be drawn by horses. The line was completed in February, 1873 at an estimated cost of about 1.5 lakhs. The line originated from Sealdah, passed through Baithakkhana, Bowbazaar, Dalhousie Square, through the premises of the

Customs House and onto the Strand Road where it ran till Armenian Ghat. Thus, Sealdah and Armenian Ghat became the two terminuses of the nascent tramway. The line was inaugurated on 24th February, 1873.[27] It was a watershed in the history of development of modern urban commutation system in Calcutta.

The tram line was opened for passengers only and not goods as originally decided.[28] In spite of being launched after much detailed planning, the line failed to gather profits running at a loss of five hundred rupees per month till November. The failure to extract any profit for all these months resulted in the line being closed after the November of 1873. Numerous reasons contributed towards the failure of this venture. The first and foremost reason was the decision to allow passengers instead of goods. The plan was originally to move business merchandise from the riverfront to the warehouses and storage facilities located inside the city. The port of Calcutta had docks, moors, berths and jetties strewn across the riverfront from Kidderpore in the south to the northern limits of the city. The goods brought down from the ships would then be moved to the city or to its distant hinterland through the various canals. But with time, the conditions of the canals worsened and many of them decayed and stagnated thus limiting the options of conveyance of these goods. It then mainly depended on the surface transport modes like horse drawn carts or carriages. Thus, the tram line would have been an ideal, modern, efficient replacement to move the goods and merchandise from the riverfront to the various custom-houses, private warehouses, storage sheds and the railway station terminus of Sealdah. This was the original thought behind the construction of the line. But in reality, the execution was different. The Government of British India in the despatch of 1871 had clearly stated that Eastern Bengal Railway Co. would not be associated with any urban railway based mass transport network in Calcutta like the tramways.[29] And also, they would not be allowed to set up a railway station on the

riverfront at Chitpore or anywhere else. But quite astonishingly, this decision was reversed after the opening of the new line. The Eastern Bengal Railway was allowed to extend a railway line to the river and a new terminal came up at Chitpore. This new line facilitated the movement of goods that was scheduled to be transported on the new tram line. Thus, the two kilometres of isolated stretch of newly built tramway was opened for passengers and did not gain enough profit in absence of the more profitable goods and merchandise. Yet another committee was set up by the Justices body after the closure of the tram line to decide on the future of the line as well as its rolling stock. In December 1873, it was decided to sell the line and its rolling stock to a British citizen, Mr. Macallister.[30] He was also given permission to extend the existing tram route. The decision was resented by the provincial administration as it saw this move as a loss procuring mechanism for them. So, they publicised the topic and invited other public enterprises to submit offers regarding this. Another significant offer came up but was less favourable than the one made by Mr. Macallister. The administration then went over the entire plan once again and consulted various other public bodies. They decided to leave the responsibility of developing the tramways in the hands of the private enterprises, albeit through some control of theirs and the Municipality. It also decided to let the Port Commissioners build a separate railway line along the riverfront, independent of the control of any other public bodies. The Municipal Corporation was thoroughly unsatisfied as it felt that it had been dealt with unfairly and as a result, submitted a petition or memorial to the Governor-General in 1876. In this particular memorial, the Corporation demanded compensation for the losses incurred from this failed venture (tramways), which according to it failed because of the contradictory steps taken by the Government of British India. But this application was rejected because the Corporation apparently had no legal right to claim compensation for their supposed losses. Eventually, the closed

tramway line and its rolling stock were all sold to the most profitable offer and in this way, the first ever venture to introduce the modern tram transport in Calcutta ended rather unceremoniously. But the development was not destined to stop. Within a few years, another attempt was made to revive the tramway network which eventually became successful. In 1876, independent and private promoters had come up with numerous proposals to set up a complete, integrated system of tramways, out of which one proposal was mooted as the best and most favourable. So, on 2nd October, 1879, an agreement was signed between the Calcutta Corporation and the newly constituted Calcutta Tramways Co. Ltd. The Company was the business venture of Dillwyn Parish, Alfred Parish and Robinson Sutter.[31] This new Company got the rights to build and maintain the tram lines and also set up necessary sidings as well as connections on all the prescribed eight routes. They were also given the right to extend the lines in future on being told so by the administration.[32] It was decided that the fare was to be determined by the Company and revised as and when necessary. As an obligation, the Company would have to pay two thousand rupees per mile of single line and three thousand in case of double lines.[33] These rates would also increase periodically in a scale that by the twenty second year of the agreement, it would be three thousand and four thousand rupees respectively. Also, according to the terms of the agreement, the Corporation had the right to purchase the tramways after twenty one years and at the juncture of every seven years. Act I (B.C.) of 1880 laid down certain terms and conditions for both the intervening parties, i.e., the Calcutta Tramways Co. Ltd. and the Corporation.[34] The pace of construction work of the tramways was quickened. The Engineer of the Corporation granted a certificate allowing trams to run on the Bowbazaar line on 27th October, 1880 and the Hare Street line on 19th November, 1880. Difficulties were faced during the construction of the proposed Chitpore line and finally to materialise the project, the street alignment was rectified on

a war footing. The initial laying of the lines was not done properly. As a result, within few years, after setting up of the network, tram tracks were jutting out at least two inches from the road surface in numerous places. The Commissioners kept on pressuring the company for the next fifteen years following the construction to remedy the technical faults and defects. A survey was done to check the defective portions of the network. A standing committee, called the Tramways Committee, hesitatingly made legal moves against the company in 1885 for their faults in construction work. They were fined fifty rupees for each mistake they made, but not much change happened. The company got a legal notice that instructed them to repair their lines and in the following year, they were told to show what improvements they had done on the said front. The Corporation suggested few important changes after going through the report submitted in 1886 citing the improvements rendered to the lines. The faulty lines were re-laid with steel rails. These new steel enforced lines were laid on concrete floor tracks with stone chips. Initially, the tramcars were being drawn by horses, but this was not for long. The tremendous heat generated during the tropical summers of Calcutta coupled with the weight of the tramcars proved fatal for the pulling horses. Many horses died from over-exhaustion which strengthened the cause of modern moving power or traction, as that would benefit both the economic and human factors.

A very significant event took place in May, 1882 when the first steam engine pulled tramcar was driven on the Chowringhee section for one month on an experimental basis.[35] Although six accidents happened during this month long experimental or trial run, but there were no casualties or fatalities.[36] After that particular month, the local residents of Chowringhee were asked to provide consultation on this and an overwhelming majority spoke in favour of this new steam driven tramcar. In this section of the tramway in Calcutta, steam engine hauled trams started running. New rules were framed that

controlled the speed of the tramcars, the noise of their movement, length of the cars, hours of running and most importantly, conduct of the tram drivers. The system would later be abandoned as this particular section or line fell outside the jurisdiction of the Municipality. During the time of the annual Bengali festival Durga Puja, the Company would manage special permission from the administration to operate tramcars on this stretch to provide conveyance for the pilgrims visiting Kalighat temple.[37] The disadvantage of the steam-driven tram was the possibility of accidents to the higher speed of the tramcars than before. In order to avoid accidents, these steam-driven trams were not allowed on the roads after sunset.[38] Another disadvantage in Calcutta was the absence of street lights which further made it risky to run a faster mode of transport on dark thoroughfares. Although initially the plan was to run the steam engine for a month, but ultimately it was allowed to run on the Chowringhee line for a year. During the entire year, efforts were made to control the trams from over speeding, to reduce the noise emitted from the steam engine, etc. But still it was quite a problematic affair.[39] The noise emitted from the steam-driven trams used to scare and startle the horses and hence for quite some time, there were pandemonium on the streets as horses pulling carriages acted up every time, they heard the sound of the trams. A section of the European community of Calcutta posed their objection to the noise nuisance of the trams.[40] On the other hand, many residents of the city praised this new technology and were happy with service it provided. A popular opinion in these circles was that the new steam engines would not cause any death of any human being or animal under their carriages due to their superior design.[41] Also, the steam engines did the work equivalent of sixteen horses. Thus, during the morning rush hours these steam-driven trams provided faster and efficient mobility to the commuters.[42] The positive feedback from many sections of the native community in Calcutta was responsible for this service not getting closed down earlier. In fact, during

the festive season of Durga Puja the steam service was kept operational to help the Hindus to travel to and from their religious places like the Kalighat Temple.[43]

Towards the end of the nineteenth century, there was a conscious effort by the colonial administration to provide electricity to all parts of Calcutta.[44] This policy also had an effect on the issue of modernisation of tramways. Further modernisation of the tramways was achieved in the year 1896. Messrs Kilburn and Co. submitted an application for granting of commission from the administration in order to introduce electric propulsion system for the trams in Calcutta. They applied for some concessions from the Company like exemption from the right of purchase as prescribed by the Tramways Act. They also applied for decrement of the track rent. On 28th January 1897, a committee was again formed by the Corporation, this time to ponder over the issue of introduction of electric trams.[45] The fact-finding reports and suggestions of this committee was accepted by the Corporation but was rejected by the Company itself. On the other hand, the condition of tram tracks deteriorated again prompting the Corporation to appoint an Inspector to examine the lines and prepare a daily report on the progress work being done to repair the faulty tracks. They also stopped all discussions on the issue of electrification of trams until the tracks were renovated completely. Eventually in 1899, the recommendations made by the fact-finding committee was accepted by the Company and remodelling and renovation works were started at a lively pace to complete the rebuilding of lines by the end of the year; electric propelled trams started operating in November 1902. A brand new agreement was signed on 9th December 1902 that gave the Corporation the right to purchase back the entire tramway system on 1st January 1931. The electrification of tram tracks was completed on 19th November 1902.[46] The very first electric tram ran on the Kidderpore line in 1902. It ran from Esplanade to Kidderpore. The first class fare was two annas. The second electric tram ran on the Kalighat line; the

next one ran from Wellington Street to Bow Bazaar and Dalhousie. The next route to have electrified tram was the Dharamtolla line. New lines were opened in the years 1903-1908. Tollyganj, Belgachhia, Baghbazaar, Harrison Road, Lower Circular Road, Alipore and Behala got tram routes during this period. The first electric tram on the Sealdah route travelled from Sealdah to High Court via Harrison Road and Strand Road in 1905. The tracks from Sealdah were extended till Rajabazaar in 1910. The Park Circus line was inaugurated in 1925, the Rashbehari Avenue line in 1928, the Upper Circular line from Rajabazaar to Shyambazaar in 1941 and the Park Circus to Ballyganj line in 1943. In the later years, the District Engineering Staff was entrusted with the duty to produce regular reports on the condition of the tracks so that defects and faults would be remedied as soon as possible. By 1914, the Calcutta tramway had around thirty miles of tracks and rolling stock comprising of 245 motors and 245 trailers. So, regular inspection of tracks was urgently needed to keep the latest urban commutation system of Calcutta fit and running. In 1913-14, the Police made eighty four new prosecution laws to deal with breaches of tramway rules. After the electrification of trams in Calcutta, the total area of the network measured 85188 feet of lines, out of which 1920 feet were used no more. The first Manager of the Company was Mr. Maples, followed by Mr. Martyn Wells.[47] Not only in Calcutta, but Howrah which is touted as the 'twin city' of Calcutta situated on the other bank of the Hooghly, also received the boon of modern tramways. In the year 1907, the Howrah Municipality gave permission to the Calcutta Tramways to lay tram tracks in Howrah. For this purpose, the Company set up a centralised power generating station at the junction of Dobson Road (modern Abul Kalam Azad Road) and Golabari Road (Dr. Abani Dutta Road). Two sets of tramlines were laid from here in the north-south direction, each of which measured four feet and eight and a half inches. The south line was opened in 1908. The line started from the old Howrah bridge and went through the Buckland

bridge onto the Howrah Court and it ran by the Howrah Maidan for another two miles before finally ending at Kaorapara Ghat. In the northern side too, the lines originated at the old Howrah bridge, passed by Salkia Bandhaghat and ended into the southern part of the Ghusuri Road (modern Jogendranath Mukherjee Road). One of the lines passed through Dobson Road, Purba Golabari Road, Howrah Road (modern Salkiya School Road) and the other through Dobson Road, Paschim Golabari Road, Grand Trunk Road, Harganj Road and then Shri Aurobindo Road in the east. Both lines in the northern section were opened for traffic in 1908. The total area of Howrah tramways was almost five miles. These tram routes no longer exist. The present Howrah bridge was the first to have an inter-city tram service which became operational in the year 1943. In the pre-Independence era, Calcutta had 35.5 miles of tramways and the Company had a fledgling presence with three hundred rolling stock and seven thousand employees under its payroll. The role of trams in the development of Calcutta as a city is immense. It was one of the most significant technological inventions that affected the modernisation of the city. It literally changed the face of the city. It was inarguably the best scientific turnaround for the nascent transport system of the city that developed under the patronage of the ruling British. Such was its importance and popularity that for a long time, it was the primary mode of mass transportation system in the city. The service it provided was unparalleled. As a result, even with the emergence of newer and more technologically superior forms of transport like automobiles, the status of trams as the primary 'people mover' did not change for a long time. In fact, for a long time, it was the primary mode of mass transport in colonial Calcutta, unfazed by newer inventions in the sector, as it itself in its heydays was considered as an engineering marvel in the field of transportation.[48] Thus, without any doubt, it was a pioneer in mass commutation system in urban Calcutta outside the sphere of suburban railway system.

The process of modernisation of surface transportation reached its pinnacle with the introduction of trams in Calcutta. Tram was considered as one of the most important scientific inventions in the sector of transportation in the nineteenth century. The major towns and cities in the western hemisphere were installing trams for their residents to travel conveniently. In the first chapter of my thesis, I have mentioned how the water transport system in Calcutta saw tremendous development after the introduction of steamships by the British and how it led to the subsequent development of the surface transport infrastructure of Calcutta where the indigenous *Palkis* were gradually phased out in favour of faster moving horse drawn carriages. Now I will discuss about how the surface transport infrastructure of Calcutta received a big boost through the introduction of trams. Trams were considered as a symbol of modernity and it defined the status of a city. The introduction of trams in Calcutta was thus a very significant historical event in her history as it kept the juggernaut of British technological development rolling; a phenomenon that was kick-started with the arrival of modern steamships on the Hooghly river. In the earlier years, the surface transport network of the city was modernised and upgraded through the introduction of modern horse drawn carriages that plied in European cities also. And, with the introduction of trams, Calcutta came at par with the most of the developed cities of that era. It also made Calcutta the focal point of all the modern technological developments brought by the British to India. The trams were the first proper urban commutation and an efficient mass transport system in Calcutta.

But the advent of trams in the city of Calcutta and their subsequent expansion also led to a significant transformation in the lives of the residents of the city, especially the local Bengali community. The city which was quite stagnant when it was not yet a city became habituated with a faster lifestyle that was a direct outcome of the British sponsored urbanisation. The residents of Calcutta were overjoyed to find an alternative

mode of surface transport in the form of trams. The trams were not only faster, but also offered a smooth, comfortable and safer option to travel from one place to another within the city. Though for some inhabitants, the emergence of trams ruined the peace and tranquillity that the city once used to offer to them. Although initially the trams were introduced to serve the commercial interests of the colonial administration, but later it became a mainstay of surface transportation in Calcutta when its effectiveness was realised by the city planners. And it gradually became an inherent part of the lives of the resident Bengali community. During the earlier days of tram, people belonging to various professions and sections of the society would avail its services. But in the twentieth century when the nationalist movement was gaining momentum in Calcutta and Bengal, trams were often targeted by the protesters as they were viewed as glowing symbols of the British colonial regime in India. Apart from these aspects, the trams in Calcutta also played a very significant role in women empowerment in the twentieth century. The decision of the British administration to keep reserved seats for travelling women in the tram carriages was a huge measure to embolden the position of women in society. Although this move was not solely for the native Indian women but it did help the cause of those who had shunned the traditional purdah system of our society. The working women found a solace and it led to a spring in their steps as they tried to move up the social recognition ladder in eyes of the local society. Hence tram became a place for all the members of the contemporary society of Colonial Calcutta.

Initially the trams ran for nine months in Calcutta, following which the monthly incurred losses of five hundred rupees led to the suspension of its services on 21st November 1873.[49] This incident affected the surface transport system of Calcutta and also the local native community who openly expressed discontent at this decision of the colonial administration. In various contemporary vernacular dailies, we can witness these

expressions. One popular opinion published in *Bharat Sangskarak* was that trams could be a long term and effective solution to the disruption caused by the frequent strikes of the carriage drivers.[50] There were also sarcastic comments published in *Saptahik Sangbad* about the futility of running a service funded by taxpayers, if that service cannot be availed by the majority of the population of Calcutta.[51] The popularity of trams in the society of Calcutta can further be gauged by comments of officegoers which were published in the *Englishman*. They were willing to spend more money on fare in comparison to the usual fare of an indigenous Palki or a European horse-drawn carriage provided the overall service was better in trams.[52] The overall sentiment of the people of Calcutta was to have an efficient transport mode like trams at their disposal in order to offset the various problems caused by the other traditional modes of surface transport. Also, there were many in Calcutta who traditionally would walk to their destinations instead of availing any mode of transport on land. In this context, Kshitindranath Thakur mentioned in his work that even when horse-drawn trams were getting introduced in 1864, there were few takers in Calcutta among the native sections due to their traditional walking practices. Though later this perception would change when trams were formally running on the streets on Colonial Calcutta. The residents of the city realised the futility of walking long distances in the tropical weather when a tram can reach the destination in a much shorter time and the journey was also comfortable.[53] Prankrishna Dutta observed that this also had an impact on the public health aspect of Calcutta as people started suffering from diabetes due to the lack of adequate physical activities like walking.[54] Hence, this technological innovation had both its advantages and disadvantages. But this new mode of surface transport had nonetheless a big positive impact on the minds of the people of Calcutta. Kshintindranath Thakur has given detailed description of his ride on a horse-drawn tram in his writings. In his opinion, the trams

were very comfortable especially during the humid summers due to their airy carriages and he enjoyed his usual ride from High Court to Park Street the most.[55] Initially, Australian Waler horses were used to pull trams. But this soon proved to a very expensive affair for the colonial tramway authority as the horses required high maintenance and would often die after not being able to withstand the heat of Calcutta.[56] Many animal lovers also protested against employing of Waler horses in the scorching heat of Calcutta.[57] A newer technology of driving trams became the need of the hour in Calcutta and soon steam-driven trams were introduced in the city by the British.[58] This had a positive implication on the Hindu community of Calcutta as this provided a faster medium of conveyance to the famous Kalighat Temple.[59] When the horse-drawn trams used to run in Calcutta, the horses were made to wear a bell before sunset. This was to give an indication or alert people of incoming traffic as there were no street lights in Calcutta in those days.[60] The horses were kept in six stables in six different tram depots located in Shyambazaar, Chitpore, Sealdah, Bhawanipore, Kidderpore and Kalinga (modern Rafi Ahmed Kidwai Road). There were no tram stops in the city, instead there were stations in Chitpore, Harrison Road, Jorasanko, Lalbazaar Junction, Dalhousie Square, etc. These stations were places where tired horses were replaced and also amenities like refreshments were available to the passengers.[61] After the establishment of an electricity distribution centre in Calcutta in 1899, soon electric trams were introduced also in the year 1902.[62] The positive reactions to this event can be found in the works of Kshitindranath Thakur who mentioned the happiness of the people of Calcutta and also expressed his own joy to witness this technological innovation in the field of public transport.[63] When the first electric tram travelled on the Kidderpore line, people and local residents were elated and the picture of joy can be understood from a report in *The Statesman*. It was mentioned in the report that when common people got to know about

the first service of the electric tram, they went in large numbers to ride on it and from the very first day, this service saw full ridership on its runs.[64] Though many native Bengalis were skeptical towards this new mode of surface transport, but thousands of people crowded on the streets when the first electric tram travelled through the native quarters of the city. Radhaprasad Gupta gave an account of this event in his writings where he mentioned how a young Jibantara Halder (later a classmate of the renowned scientist Satyendranath Bose) witnessed the tram along with thousands of onlookers. Such was the enthusiasm over this event, that Jibantara's school declared a holiday on that day to let their pupils witness the landmark event.[65] The electrification of trams had a huge impact on the cultural evolution of the Bengalis of that era. Many young Bengali educated youth used to read books and write under the lights of the tramcars, a practice that also helped them to save or conserve electricity in their homes.[66] We find references of similar practices in the works of economist, Bhabotosh Dutta. He speaks about his friends, Sadhan Kumar Ghose and Parimal Ghose who used to read literary works every day under the lights of the tram.[67]

The introduction of trams in Colonial Calcutta had a profound impact on contemporary Bengali literature. Bibhutibhushan Bandopadhyay in his famous novel, *Aparajito* portrays the curiosity of young minds about the electric trams of Calcutta.[68] The female lead character, Leela tells the male protagonist, Apu about how tramcars are running in front of her house in Calcutta, but without the help of horses or steam engines. Instead, only an overhead electric wire is helping the trams to move.[69] Both Leela and Apu were oblivious of the technology behind this, but their innocent curiosity also portrays the contemporary mentality of the people of Calcutta and paints an enigmatic picture of the society.[70] We also can find similar literary references to trams of Calcutta in the works of Sunil Gangopadhyay. In his novel, *Prothom Alo*, the protagonist, Bharat

considers trams as the most reliable, secure and fastest mode of transport even better than the steamships that ply on the water.[71] But contradictory accounts can also be found in the Bengali literature where trams have been viewed as detrimental to the inherent character of the city of Calcutta. Rabindranath Tagore did not have a very positive opinion about this modern technological invention in the field of surface transport.[72] The trams played a huge role in transforming the character of Calcutta from a primarily rural setting to a developing urban centre. It not only provided faster mobility to the people of character, but it also provided character to the newly developed city of Calcutta during the British colonial rule. Trams also had some problems. Initially when horses were used to drive trams, a lot of noise pollution would happen in busy and congested neighbourhoods, a phenomenon which was previously not there. Also, the high electricity consumption of electric trams caused numerous problems in various pockets of the city. It has been said that when electricity was drawn from a transformer near the erstwhile Presidency College, it hampered the research activities in the college laboratories due to the constant shortage of electricity.[73] A lot of references about trams can be obtained from the works of Kshitindranath Thakur who also portrayed the class division of trams in Calcutta. He mentioned in his works about the two different classes of compartments that existed in the tramcars of Colonial Calcutta.[74] According to him, in spite of tramcars having two different classes, each was comfortable in their own way.[75] The first class compartment had cushioned seats, overhead fans and beautiful blue lights, whereas the second class compartment had wooden seats without cushions and light red lights.[76] But a section of the society of Calcutta vigorously protested about this division as they felt the presence of such a class division as extremely discriminatory in a city which is trying to embrace modernity. They demanded to the authorities to remove this class division.[77] So indeed there were various contradictory factors which plagued the regular interactions

between the trams and people of Colonial Calcutta.[78]

As I have mentioned earlier, The Calcutta Tram Company made a bold move in Calcutta by reserving seats for females above five years of age in the tramcars. It was also announced that any violation of this would result in a fine of twenty rupees.[79] The decision was an excellent one from the perspective of female empowerment in contemporary society of Calcutta, if not India. In the beginning of twentieth century, females in Calcutta had started stepping out of their houses to seek education like their male counterparts or to attend their jobs in the various offices and institutions of the city. The profound impact of the introduction of trams in Calcutta on the women of the city is evident from the works of litterateur, Punyalata Chakraborty who wrote how it opened a new dimension for the womenfolk who were stuck behind the walls till date.[80] She herself felt her world getting transformed when she first rode on a tram with her father and three sisters. But her joyous experience was somehow marred by the reactions of fellow passengers who kept staring at her and her sisters.[81] Experiences of similar kinds have been expressed by various leading women intellectuals which can establish the reluctance of the contemporary patriarchal society to accept the freedom of women. So, in spite of the advent of trams and the decision of the colonial authorities to open new avenues for women, societal practices and traditions still prevented them from achieving freedom in the truest sense.[82] In one of her publications, Priyabala Gupta expressed sadness at not being able to enjoy the freedom that was available to the boys of the society of Calcutta.[83] She describes how she used to longingly watch the trams on the streets when she travelled to her relative's place in Harrison Road of Calcutta with her family.[84] She has efficiently painted in her works the contradictory lives of males and females in Colonial Calcutta where the females were unable to do a lot of things due to the societal restrictions imposed on them.[85]

Famous litterateur, Leela Majumdar used to travel on trams with her classmates during her postgraduate days, but they faced a lot of flak from many people for doing the same.[86] Thus, it can be clearly stated that the technological marvel of trams created the first efficient mass public system of Calcutta but it failed to change the patriarchal attitude of the males of Calcutta.

The gradual development of trams also helped to spread the boundaries of the city of Calcutta as the core got connected to the periphery. We get to know the impact of these developments from the writings of Sukumar Sen who during his student days, used to travel from Belgachia to Behala on trams, a route that was almost fourteen kilometres long.[87] The neigbourhood of Ballygunge started developing in the first half of the twentieth century and Protiva Bose has described the glowing presence of trams in this process of urbanisation as it connected Ballygunge with other locations of the expanding city.[88]

In the first two decades of the twentieth century, Bengal witnessed a spurt of nationalist movements and revolutionary activities. Calcutta being the capital of this province and the country also became a hotbed of the nationalist movement. In the decade of 1920, the colonial institutions in India started facing a lot of agitation from the protesters.[89] The province of Bengal saw such anti-colonial protests as early as in the year of 1905 when the Swadeshi Movement happened.[90] Now since the tram was a symbol of the British rule, it faced a lot of destruction from the protesters. In the subsequent decades, the Civil Disobedience Movement saw similar protests where trams were put of fire in Calcutta to protest the arrests of the leadership of the nationalists.[91] Similarly, the Quit India Movement also brought similar scenes of protest in Calcutta when electric overhead wires of trams were cut and tramcars were set on fire.[92] Quite significantly, local native

policemen also joined in these protests and set the tramcars on fire.[93] Hence when it came to protesting against the oppressive colonial rule, the local people did not hesitate to destroy their primary mode of surface transport which they otherwise avail on normal days. In 1921, regular strikes led to the suspension of tram services for sixty four consecutive days in Calcutta which made life difficult for the regular commuters who depended on trams for their journeys. It was during such phases of political unrest when trams became unavailable and there was need for an alternative of mode of surface transport to serve the need of mass movement in the city of Calcutta.

References

[1] H. Beverley, *Report On The Census Of The Town Of Calcutta* (Calcutta: Bengal Secretariat Press, 1876), 31.

[2] Anindita Ghosh, "Singing in a New World: Street Songs and Urban Experience in Colonial Calcutta," *History Workshop Journal* 76 (2013): 114, accessed December 12, 2020, doi: https://www.jstor.org/stable/43298734.

[3] Ranjit Sen, "Colonial Urbanization, Calcutta: A Case Study," *Journal Of The Asiatic Society* LVII, 1 (2015): 26.

[4] Beverley, *Report On The Census OF The Town Of Calcutta*, 31.

[5] "Calcutta," *Volume Of The Indian Science Congress Association* 44 (1957): 20-1.

[6] Sumanta Banerjee, *The Parlour And The Streets: Elite and Popular Culture in Nineteenth-Century Calcutta* (Calcutta: Seagull Books, 1989), 34.

[7] Swati Chattopadhyay, *Representing Calcutta: Modernity, Nationalism and the Colonial Uncanny* (New York: Routledge, 2006), 87.

[8] Ibid.

[9] Ghosh, "Singing in a New World: Street Songs and Urban Experience in Colonial Calcutta",116.

[10] Oneil Biswas, *Calcutta & Calcuttans* (Calcutta: Firma KLM Private Ltd., 1992), 438.

[11] Anindita Ghosh, *Claiming the City: Protests, Crime, and Scandals in Colonial Calcutta, c. 1860-1920* (New Delhi: Oxford University Press, 2016), 8.

[12] Sumit Sarkar, *Writing Social History* (New Delhi: Oxford University Press, 1997), 166.

[13] Ghosh, "Singing in a New World: Street Songs and Urban Experience in Colonial Calcutta", 115.

[14] Atul Sur, *Kolkata* (Kolkata: Sahityaloke, 2016), 85.

[15] Samita Gupta, "Theory and practice of town planning in Calcutta, 1817 to 1912: An Appraisal," *The Indian Economic and Social History Review* 30, 1 (1993): 42, accessed February 23, 2021, doi: https://www.jstor.org/
stable/41820809.

[16] Nishit Som, "Evolution Of The Surface Transport System In Calcutta." In Nisith Ray and Ranjit Roy, ed., *Bengal Yesterday And Today* (Calcutta: Papyrus, 1991), 117.

[17] Ibid., 121.

[18] Richard Harris and Robert Lewis, "Numbers didn't count: the streets of Colonial Bombay and Calcutta," *Urban History* 39, 4 (2012): 641, accessed March 8, 2021, doi: https://www.jstor.org/stable/
10.2307/26398174.

[19] S. W. Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth* (Edinburgh: T. And A. Constable, 1916), 322.

[20] Ibid., 324.

[21] Ibid.

[22] Ibid., 324-6.

[23] Ibid., 327.

[24] *The Calcutta Municipal Gazette*, November 28, 1936, 43.

[25] *Proceedings of the Government of India*, *Finance Department*, Municipal Branch, 1879 (New Delhi: National Archives of India), File No. 223.

[26] Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth*, 324.

[27] Ibid.

[28] *Proceedings of the Hon'ble the Lieutenant Governor of Bengal*, *Judicial Department*, 1872 (Kolkata: Directorate of State Archives), File No. 3787.

[29] *Proceedings of the Government of India*, *Home Department*, Municipal Branch, 1882 (NAI), File No. 301.

[30] *Proceedings of the Government of India*, *Home Department*, Municipal Branch, 1883 (NAI), File No. 54.

[31] Ashish Chakrabarti, "A Century of Trams," *The Statesman*, October 27, 1980.

[32] Sisir Mitra, *A Public Facility: Its Management and The Workers* (New Delhi: People's Publishing House, 1980), 2.

[33] Ranabir Ray Choudhury, *Calcutta A Hundred Years Ago* (Calcutta: Statesman House Publication, 1987), 9.

[34] Bengal Act of 1880: The Calcutta Tramways, Act 1880 (Calcutta: Bengal Secretariat Book Depot, 1929), 7-27.

[35] Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth*, 328.

[36] Ibid.

[37] Radharaman Mitra, *Kolikata Darpan* (Calcutta: Subarnarekha, 1952), 180-84.

[38] Shibram Kumar, ed., Kolkatar Football (Kolkata: Probhabati Prokashani, 2002), 310.

[39] Santosh Chattopadhyay, *Palki Theke Patal Rail* (Kolkata: Dey's Publishing House, 2007), 76.

[40] Abhijit Saha, *Rajpathe Tram: Biborton Obhighat O Kolkatar Somajjibon 1873-1947* (Kolkata: Bookpost Publication, 2022), 93.

[41] Nirmalchandra Bhattacharyya, *Bismrito Bangla* (Kolkata: Dey's Publishing House, 2007), 14.

[42] Ibid.

[43] Ashok Mitra, Teen *Kuri Dash* (Kolkata: Dey's Publishing House, 1990), 23.

[44] Suvobrata Sarkar, *Let There Be Light: Engineering, Entrepreneurship and Electricity in Colonial Bengal, 1880-1945* (UK: Cambridge University Press, 2020), 119.

[45] Bengal Act of 1880: The Calcutta Tramways, Act 1880, 7-27.

[46] Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth*, 329.

[47] Mitra, *Kolikata Darpan*, 185.

[48] Goutam Gupta, "Tram Liner Gaan," *Ei Samay*, April 12, 2015.

[49] Mitra, *Kolikata Darpan*, 140.

[50] "Report of the Native Newspapers," *Bharat Sangskarak*, October 24, 1873.

[51] *Saptahik Sangbad*, October 31, 1873.

[52] Dalia Chakrabarti, *Colonial Clerks: A Social History of Deprivation and Domination* (Kolkata: K. P. Bagchi & Co., 2005), 89.

[53] Kshitindranath Thakur, *Kolikatae Cholafera: Sekale Ar Ekale* (Kolkata: Kalpan, 1988), 42.

[54] Ghosh, *Claiming the City: Protests, Crime, and Scandals in Colonial Calcutta*, 69-70.

[55] Thakur, *Kolikatae Cholafera: Sekale Ar Ekale*, 46.

[56] Ibid., 45.

[57] Siddhartha Guha Ray, *Calcutta Tramwaymen: A Study of Working Class History* (Kolkata: Progresssive Publishers, 2019), 24.

[58] "Special Issue On 100 Years of The Statesman," *The Statesman*, May 1, 1882, 74.

[59] Radhaprasad Gupta, "Tobu Tramer Kono Itihas Nei," *Anandabazar Patrika*, May 1, 1994.

[60] Premankur Atarthi, *Mohasthobir Jatak: Prothom Porbo* (Kolkata: Dey's Publishing, 1981), 38.

[61] Sachin Das, *Ek Poisar Tram* (Kolkata: Dey's Publishing, 2016), 66-7.

[62] Mitra, *Kolikata Darpan*, 184.

[63] Thakur, *Kolikatae Cholafera: Sekale Ar Ekale*, 47-8.

[64] "Kolkata 77," *Naba Jubak Sangha Smarak Grantha*, 75.

[65] Gupta, "Tram Liner Gaan".

[66] Saha, *Rajpathe Tram: Biborton Obhighat O Kolkatar Somajjibon 1873-1947*, 97.

[67] Bhabotosh Dutta, *Aat Doshok* (Kolkata: Protikshan, 1988), 29.

[68] Bibhutibhushan Bandopadhyay, "Aparajito," In *Bibhuti Rachanabali: Prothom Khondo* (Kolkata, Mitra & Ghosh, 1941), 259.

[69] Ibid.

[70] Ibid.

[71] Sunil Gangopadhyay, *Prothom Alo* (Kolkata: Ananda Publishers, 2013), 842-43.

[72] Tuhinshubro Bhattacharyya, *Shohor Kolkatae Rabindranath* (Kolkata: Patralekha, 2015), 13.

[73] Bidisha Chakraborty and Sarmistha De, *Calcutta in the Nineteenth Century: An Archival Exploration* (New Delhi: Niyogi Books, 2013), 322-23.

[74] Thakur, *Kolikatae Cholafera: Sekale Ar Ekale*, 48.

[75] Ibid.

[76] Das, *Ek Poisar Tram*, 54.

[77] *The Calcutta Municipal Gazette*, February 26, 1927, 693.

[78] Ramzan Ali Khan, *Amar Dekha Kolkata* (Dhaka: Monolobha, 1989), 61-2.

[79] *Proceedings of the Government of India*, *Home Department*, Municipal Branch, 1934 (NAI), File No. M.3T-2.

[80] Punyalata Chakraborty, *Ekal Jokhon Shuru Holo* (Kolkata: Dey's Publishing, 2007), 30.

[81] Ibid., 31.

[82] Partha Chatterjee, "Colonialism, Nationalism and Colonized Women: The Contest on India," *American Ethnologist* 16, 4 (1989), accessed on March 24, 2023. doi: https://www.jstor.org/stable/645113.

[83] Ranjan Gupta, ed., *Smritimanjusha* (Kolkata: Dey's Publishing House and School of Women Studies, Jadavpur University, 1999), 29.

[84] Ibid.

[85] Sutapa Bhattacharyya, *Meyeder Smritikatha* (Kolkata: Signet Press, 2017), 45.

[86] Leela Majumdar, *Pakdondi* (Kolkata: Ananda Publishers, 2017), 208-9.

[87] Sukumar Sen, *Diner Pore Din Je Gelo* (Kolkata: Ananda Publishers, 1984), 117.

[88] Protiva Bose, *Jiboner Jolchhobi* (Kolkata: Ananda Publishers, 2018), 141.

[89] Bipan Chandra, *India's Struggle For Independence 1857-1947* (New Delhi: Penguin Books, 1989), 23.

[90] C. A. Bayly, "The Origins of Swadeshi: Cloth and Indian Society." In Arjun Appadurai, ed., *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge: Cambridge University Press, 2013), 309.

[91] Ishita Banerjee Dube, *A History of Modern India* (New Delhi: Cambridge University Press, 2015), 395.

[92] Saha, *Rajpathe Tram: Biborton Obhighat O Kolkatar Somajjibon 1873-1947*, 91.

[93] Kallol Bandopadhyay, *Kolkata Mahanagari Ebong Sonnihito Onchol Somuhe 1942 Saler August Andolon* (Kolkata: Progressive Publishers, 2003), 5.

CHAPTER FOUR

The Emergence of Automobiles in Calcutta: A History of Mobility and Development

The Industrial Revolution put Great Britain ahead of her rival nation states and empires in wealth and power in the nineteenth century. However, most of the technological inventions happened in the time period of 1869-1939 in Germany and the United States. The early period of the steam road-coach had concluded in Europe by 1840, its development having been effectively stultified by too much road tolls being imposed by rod authorities upon an otherwise flourishing and successful road industry. Interest in mechanical road-transport then dwindled and it was not until many years later when efforts were made to develop the technology of steam power to drive vehicles on roadways. However, a few far-sighted inventors who realised the huge long-term potential of steam power carried on with their experiments. As tremendous developments were taking place in the railway front, inventors and manufacturers realised that steam-driven private carriages would be feasible if materialised.[i] In 1858, in England, Thomas Rickett of Buckingham built the first steam carriage. H. P. Holt constructed a small road-steamer in 1866. In 1868-70, J. H. Knight of Farnham constructed a four-wheeled steam-carriage which originally had a single cylinder engine, but subsequently was fitted with two cylinders. Another variety of steam-coach was built by Charles Randolph of Glasgow in 1872. In 1875, R. Neville Grenville of Glastonbury designed a three-wheeled steam vehicle which operated on road surface for a long time, making it one of the most important inventions in this genre. In 1880, Amede'e Bolle'e Le Mans designed and subsequently built a steam-coach which became a very popular vehicle and ran with considerable success. In 1887, a small steam powered tricycle was built by Comte de

Dion. In 1899, an American inventor, Gardner financed the project of a fellow inventor named Serpollet to build a steam-carriage for road and the product named *Gardner-Serpollet* steam-car became one of the most popular vehicles in Europe, predominantly in Britan and France. The old firm, Thornycroft built a similar vehicle in 1896. In the following year, G. S. Soame of Marsham, Norfolk built a steam vehicle meant to be used on roads. The development of steam-carriages witnessed its finest hour in the twentieth century when excellent specimens of this genre were running on the streets of all major towns and cities in the world. But with increase of population, an effective system of transportation was required.

Thus emerged the concept of automobiles which were meant to deliver excellent performances and not meant to exhibit only grace. The inventors were not convinced by the mechanism and operating procedure of steam powered vehicles. Steam propelled vehicles were quite heavy. Although it was possible to manufacture lightweight steam engines but it was impossible to make the components and machine parts like boilers, steam-generators and burners light in weight. It was also impossible to create compact components that would fit inside light road vehicles of the future. Even for the sake of argument, if all of these anomalies were rectified, the problem of stopping vehicles from time to time to take on water to cool off the engines would be there. Thus, the invention of the technology of internal combustion engine was very significant; it affected the growth, development and modernisation of civilization in that era. In a steam engine, the firebox was separated from the cylinder, whereas in an internal combustion engine, the fuel gets burnt inside the cylinder only thus converting its energy into motion. Although the idea was pretty much there in the scientific community, the first working model was built by a French engineer, Etienne Lenoir in 1859.[ii] Initially, these engines were produced on a large scale but only for use in factories, industrial units and workshops as production

machinery. These first-generation combustion machines were suitable for these purposes only as they ran on coal gas and had to be connected to municipal gas lines to keep them running. The next and most important hurdle faced by the engineers working on these was to sort out the issue of fuel. Some alternative was required to detach the engines from fuel lines and still keep then running. In the year 1883, Karl Benz of Mannheim, Germany invented a new way or rather process to vaporize gasoline, which was a by-product obtained from the manufacture of kerosene from petroleum. Three years later, he achieved the impossible by installing a gasoline engine on the three-wheeled cart. Another German engineer by the name of Gottlieb Daimler did the same thing. Motor car was invented by this famous German engineer, Gottlieb Daimler in the year 1886. The range of Mercedes car which was showcased in Paris in 1900 was named after his daughter. Daimler and Benz eventually joined forces and began production of the first generation of automobiles from their production units in Germany. Other enterprises and their entrepreneurs manufactured cars based on steam engines and electric motors, but the concept and technology engine became the de facto standard in car-making of twentieth century. The earliest claim of a motor car or rather a vehicle driven by an internal combustion engine was made by an Austrian, Siegfried Marcus. He apparently developed one such engine in the year 1864. Karl Benz built a light three-wheeled vehicle driven by a horizontal single-cylinder petrol-engine in 1885. He made two further models in this category before designing a four-wheeler or a four-wheeled car. F. W. Lanchester of Britain, a distinguished engineer also developed designs of a motor car in 1895-96 and his designs were significant as the principles he incorporated in his designs were found in motor cars for the next half of the century.[iii] Around this time, Lord Austin designed a motor vehicle. In the United States, Henry Ford, considered, a visionary in the field of automobiles designed his first motor car in 1896.Ford's original car was fitted with a twin-cylinder

four-stroke water-cooled engine. This model of Ford was handmade like all other cars of that era. Towards the end of the nineteenth century, in 1898, the Renault brothers of France designed and developed a car that became the so-called trendsetter in the sector of automobiles and its future developments. A standard design was soon developed and built and it remained in manufacture with an unaltered design for many years and all of these sported the features introduced in the original design of the Renault.

The first automobile that rolled out on the streets of Calcutta in 1865 was incidentally a road steam-carriage. T. E. Thomson & Company, based at 14, Esplanade Row of Calcutta published an advertisement in the *Bengalee*. It was about a road steam carriage which was up for sale.[iv] According to the claim in the advertisement, the carriage was capable of running at an average speed of 10-12 miles per hour on ordinary roads.[v] It had a passenger capacity of five and had its own engineer. Coal was the fuel and water was also required to cool down the engine to ensure smooth operations.[vi] So, this road steam carriage was indeed the first automobile of Calcutta. The year 1873 is significant in the history of Calcutta for the advent of tramways. But this year also witnessed another important milestone when the first steam powered road roller was introduced in the city. An engineer of the Calcutta Corporation, William Clarke was the person behind this development. In 1863, when he travelled to England, the Justice of Peace body gave him the permission to procure a steam powered road roller from there. He got a twelve ton heavy roller made in England to use it on a nine feet wide road in Calcutta. The estimated cost for the manufacturing was around 615 pound sterling. Soon, another road roller was bought for 13,200 rupees. The reason for this high cost was because of its elite past, the roller was previously used on roads in the city of Paris. In 1875, a light roller was procured for 7,250 rupees and before 1888, two more light rollers were bought. These were the mechanised vehicles in the city of Calcutta then.[vii] The famous engineer, E. R. Crompton

first utilised a road steam-carriage in the Indian subcontinent to ferry passengers from one place to another. Crompton came to India in 1865, when he was only twenty years old. He was an officer of the Rifles Brigade of the British army. Before arriving in India, he had already created a steam powered vehicle or motor car with his own hands back in England. The car was known as *Blue Bell*. He had dissembled the vehicle and bought it to Indian shores in that condition. Later, he would assemble his creation and drive it on the streets of Moradabad in north India. The vehicle is presently a part of the collections of the London Science Museum.

At that point of time, the Postal Service used to operate 'bullock trains' on the Grand Trunk Road. Basically, bullocks were employed to pull carts. Crompton convinced the then Governor, Lord Mayo to run road steam-carriages instead of these carts for faster mobility. A convinced Lord Mayo was happy to appoint Crompton as the new superintendent of the 'Government Steam Train'. As a result, he left his army job. In 1871, a new steam engine arrived in Calcutta from Edinburgh. This steam engine had eight horsepower and was manufactured by the R. W. Thompson Company of Edinburgh. The steam engine had huge wooden wheels which were covered with rubber tyres. Crompton put this machine on trial between Delhi and Ambala. He faced numerous obstacles during the trial run. The type of fuel required to run this engine was coal but because of depleted reserves, he had to use wood. There were many bridges in that stretch between Delhi and Ambala which were not tested for such a heavy machinery. So, Crompton had to take the risk of driving the engine over those untested bridges.

To get rid of all the issues that he faced during the trials, Crompton ordered four customised steam engines from the Ransom, Sims & Head Company of Ipswich. They were given the work order to manufacture four steam engines with hundred horse power each. The giant wheels which were required for these vehicles were manufactured by the

North British Rubber Company. The first steam engine which was built was named *Chenab* and Crompton went to England to undertake trials on the new machine. But there was a mishap during the trial run as the boiler of *Chenab* exploded. It resulted in the burning down of the Grand Stand of the Ipswich Race Course and the Government of India had to pay for the damage. Crompton gave instructions for a modified boiler. The new boiler manufactured was called *Field* and it enabled *Chenab* to move an omnibus comprising of 120 passengers from one place to another. During the Wolverhampton Exhibition in England, *Chenab* became the chief attraction. The second manufactured steam engine named *Ravi* was run by Crompton between Ipswich and Edinburgh. Even while it was carrying a load of forty tons, the steam engine ran faster than a goods train of the Great Northern Railway.[viii] A satisfied Crompton set sail for India with these two engines in the February of 1872. The headquarters of the 'Government Steam Train' was set up in Rawalpindi. In October of 1872, *Chenab* and *Ravi* started operating between Rawalpindi and Attock. A third engine named Indus arrived in India soon. Though there is no information about the fourth steam engine. The steam trains were quite successful on roads. But the main factor was the presence of Crompton and his tireless efforts to keep the machines operational. After he went back to England, the conditions of these vehicles deteriorated.[ix]

Crompton came back to India in 1896, keeping the request of the Government of India. He was now a trained and certified electrical engineer. He had already become famous globally due to his exploits. He became the first person to light up an incandescent electric bulb inside a house in 1882. The British administration in India wanted to introduce the 'Electric Light Act' and asked for his expertise in this matter. In the year 1899, Crompton was requested by the ruler of Kashmir to do a survey for a very strategic railway line. In Jammu and Kashmir, the Banihal pass was located at an elevation of

approximately nine thousand feet. The ruler of Kashmir wanted to explore the opportunity of constructing an electrified railway line through this pass. In this survey report, Crompton suggested to set up a hydel power plant at a place called Ramban. He said that this project will help the entire Sialkot region to get industrialised. He spoke about the possibility of setting up of sugar mills, iron and steel industry, aluminium nanufacturing, etc. The ruler of Kashmir rejected his report.[x]

There is a debate on when the first motor car appeared on the streets of Calcutta. According to some, it was in 1896. While the others are of the opinion that it was in 1899. The first mention of a motor car in Calcutta can be found in the February edition of the *Indian & Eastern Engineer* in the year 1899. A few months later, another report regarding motor cars appeared in the journal of the Photographic Society of India. It was mentioned that a Bengali gentleman is often seen on the streets driving a car which created both excitement among the onlookers and a foul smell in the air.[xi] Another French gentleman was mentioned who used to make rounds in the Maidan area of Calcutta on his motorcycle.[xii] A lot of information about the emergence of motor cars in India can be found in the book named, *Sixty Years Of Motor Transport In India* which was published on the occasion of Dunlop Company completing fifty years of their operations in 1959. Being a tyre manufacturer who started their business in India in 1898, Dunlop had information about the first motor car in Calcutta. It supports the view that the very first motor car arrived in Calcutta in 1898. The book also mentioned that in 1898, four motor cars had arrived in Bombay (modern Mumbai). Three of these *Oldsmobil* cars had illustrious owners like Jamshedji Tata, Rustam Kama and Kawaji Wadia. The fourth car, whose model is unknown was bought by a person called Pack. At the same time, a person named Aubert bought a Serpollet steam car in Calcutta. Also H. H. Reynolds, an official of Andrew Yule & Company bought a French Peugeot car and brought it to the city of

Calcutta. The first Bengali to buy and own a car was C. Bysak.[xiii] He also belonged to an illustrious family of the city. The history told in the publication of the Dunlop Company was also reflected in the 1904 September edition of *The Empress*. The reporter had mentioned that the first car owner in Calcutta was Mr. Reynolds.[xiv] Incidentally, the first advertisement in the newspapers of Calcutta for the sale of a motor car was published in the year 1900.[xv] For the next two years, Jambone & Company used to put up advertisements to sell cars.[xvi] In 1902, Gardner Serpollet praised the steam powered motor car. He touted it as the ideal vehicle for Indian roads since it ran on kerosene which is easily available. It was also quite hardy, easy to maintain and was able to climb on steep mountainous roads. The advertisers also claimed that this motor car did not vibrate or emit smoke.[xvii] In that year only, another advertisement was published through which they informed the people of Calcutta about importing *De Dion Bouton*, *Panhard Levassor* cars and vessels that can navigate in shallow water. In 1902, another car seller emerged in Calcutta. The Motor Transport & Supply Company soon became the sole importer of *Locomobile* cars. They used to sell these cars from their showroom at Dalhousie Square of Calcutta.[xviii] With the emergence of motor cars in Calcutta, there was a spate of advertisements. The car sellers not only sold cars, but also provided driving lessons as well as supplying fuel to the owners.[xix] The uncertainty over the steady supply of petrol can be a big reason for Calcutta's reliance on steam powered cars in the initial days of the 'motor car' era. But even as late as 1925, there were four steam powered cars in Calcutta.

Among the oldest car sellers in Calcutta, the Motor Transport Company used to import low cost petrol cars. The main products were the six horse power *Speedwell* which could accommodate two passengers and the five horse power *Biston Humbaret* which also had seating capacity for two people. Both these models were worth three thousand rupees in 1904.[xx] Apart from these models, the seller also imported *Daimler*, *Wolsley*,

Napier and *Gladiator* cars. The Continental Electric Company garnered the most attention. They gave a tour of the carved dash *Oldsmobil* to a reporter from the *Stateman* and climbed up a few flights of stairs of a public in that vehicle.[xxi]

The year 1904 was significant for motorised transport system in Calcutta. The Automobile Association of Bengal which is currently known as the Automobile Association of Eastern India (A.A.E.I) was established in this year. On this occasion, an automobile meetup of cars was organised for the first time in the city, followed by a friendly car rally.[xxii] For the first time in public memory, Calcutta witnessed several cars and motorcycles being parked near the statue of Lord Dufferin in the Maidan area for participation in the rally. The total registered car at that time in Calcutta was approximately sixty.[xxiii] There were a few women passengers but the most notable was the presence of a female owner who drove her own car. Mrs. Acatos caught the eyes of the onlookers through her efficient handling of her twelve horsepower car. The car rally covered Park Street, Free School Street, Wellington Street, Cornwallis Street and B. T. Road. It culminated at Jatindra Mohan Tagore's palace named *Emerald Bower*. Pradyot Kumar Tagore greeted all the participants of the car rally. Later everyone saw his new 'Electric Landau' and praised it. Several women went around in the garden of the palace in that vehicle. Later the participants went towards Barrackpore where they were similarly greeted by Kennison Mills and Archie Birkmyre. The name of the manufacturer of Pradyot Kumar's vehicle was never known. But an idea can be formulated about the type of car that was imported to Calcutta around that time from the various advertisements of that era. Jambone Company used to import electric vehicles in 1900 but the manufacturers were never mentioned in their advertisements. The Motor Transport & Supply Company started selling *Waverley* electric cars in 1904 in Calcutta. Various models like *Surrey*, *Landau*, etc started to be seen in greater numbers on the streets of Calcutta. All these cars

were named after the horse-drawn carriages. With the advent of motorised transport in Calcutta, various famous carriage manufacturers started building the body structure of these new vehicles. Thus, with the advent of motor cars, the 'coach makers' of Calcutta became 'body builders'. The famous coach makers of the then Calcutta, Messrs. Stewart & Company also started building the bodies for cars. In 1902, Dykes & Company built a car modelled on the *Brougham* carriage. The car had fifteen horsepower.

The very first motor car that was manufactured in India by another coach maker of Madras known as the Simpson & Company. It was established in 1847 and their horse-drawn carriages became famous in India and abroad by 1857. Later they became the manufacturer of *Parkins* engines. Samuel John Green, a stakeholder of Simpson & Company built a steam car in 1903. But this was the only car that was manufactured by Simpson, later they shifted their focus to the import of foreign cars. They also use to make the body structure for cars. The first Bengali firm that became famous in the automobile sector was the Great Eastern Motor Company. It was founded by Hemedra Mohan Basu. The exact date of its establishment is not known, but by 1911 it had become quite famous in Calcutta. To ensure the smooth functioning of his company, Hemendra Mohan has installed a board of directors comprising of eminent Bengali people of that era. Dr. Suresh Prasad Sarbadhikary, Sir Nilratan Sircar, Acharya Jagadish Chandra Basu, the Maharaja of Natore, the Maharaja of Cossimbazaar, Sir Kedarnath Das, the brother of Upendrakishore Ray Chowdhury, Muktidaranjan Roy and others. The Great Eastern had a big retail outlet on the Park Street and had their repairing and servicing workshop was behind it. 200 to 250 vehicles could be stored there. Mr. Preston who studied engineering from abroad was appointed as the supervisor of this facility. He used to examine the cars and give the character certificate of the same. Hemendra Mohan maintained a diary in which he wrote the technical specifications of various card models in 1912. It was quite

evident from his writings that it was primarily his decision to import the number and kind of cars. There were several models mentioned in his diary which were not found in the later years. The *Klaxon* electric horn was first used in cars in 1911 and it was considered by Basu to be very effective in its function. While the price of cars were around seven to eight thousand rupees in Calcutta, the price of electric horns was forty five. This high price was the reason behind bulb horns or mechanical horns being preferred by users of Calcutta for a long time before electric horns were used. The economic crisis that happened as a result of the First World War and subsequently the death of Hemendra Mohan in 1916 caused the complete closure of the Great Eastern Motor Company.

An advertisement in the *Business* in the year 1920 showcased a car standing in front of the Victoria Memorial in Calcutta. It was claimed to have been a complete ingenious product and was manufactured by the Russa Engineering Company of Calcutta. The Russa Company had their factory in Bhawanipore. They used to import engines from *Ford* and build their own cars based on those engines. Their cars were called *Russa*. There were around seven of these cars in Calcutta in 1925. Dr. S. K. Mullick, who was the health officer of Howrah owned one of these cars. Another of these was owned by the Calcutta Chemical Company. Bachman who used to sell cars and was a participant in the car rally of 1904 started to manufacture their own cars from the year 1912. Bachman along with A. Duclos procured a patent from the Kolkata Patent Office to manufacture friction and differential belt for cars in 1910. A person named W. Hendry who used to live on 20, Convent Road used to own a Bachman in 1925. Though the engine of the car was not made by Bachman. Claims were made by the collector of Jessore that a six horsepower car was locally made in Jessore under the patronage of the king of Naldanga and it was exhibited to the public. Though the claims of being completely indigenous might not have been true. The credit for manufacturing the first cars in India complete with engines and

no imported parts goes to a Bengali whose name has been forgotten by everyone. Bipin Behari Das was the first person to build at least three cars in a makeshift garage in the backyard of his house near Ballygunge Phari in Calcutta. The first Swadeshi car was manufactured in the year 1931, which was bought by Benares Hindu University and was used by Motilal Nehru and Pandit Madan Mohan Malaviya. In 1933, Bipin Behari Das manufactured the second car for the Calcutta Corporation. Apart from the tyres, spark plug, carburettor, everything else was made by Das. He took some advances monthly during the production of the car. It was finally put on trial runs and was given the registration number 35977 by the Calcutta Police. The entire cost of the car was mere three thousand rupees.

Quite significantly, the contemporary Bengali councillors of the Calcutta Corporation were the biggest critics of Bipin Behari Das. *The Calcutta Municipal Gazette* is a testament to that. B. K. Basu, Sushil Chandra Sen, Bhupendranath Banerjeee, P. N. Guha and Professor S. C. Sen were the councillors who expressed their doubt at the viability and possible success of Bipin Behari's project. Only D. P. Khaitan, Mayor Santosh Kumar Basu and J. C. Gupta who was incidentally the superintendent of the Motor Vehicles were in favour of Bipin Behari Das. He did not get enough recognition during his lifetime and also after his death. In 1938 after he passed away at the age of fifty five, the Calcutta Municipal Gazette published a very brief obituary on him. He had built cars for the State of Gwalior also which ran quite successfully for a long time. He was busy in the production of a car at the time of his death. Bipin Behari Das was the first person to manufacture a car in India using completely indigenous technology.

Cars had become very popular in Calcutta by then and numerous eminent Bengali personalities had become fans of cars. Dr. Nilratan Sircar owned nine cars during his lifetime, including some models from *Chevrolet*, *Renault*, *Dodge* and *Ford*. Another

famous personality, Dr. Bidhan Chandra Roy also owned several cars including models from *Renault*, *Columbia* and *Chevrolet*. Dr. U. N. Brahmachari owned three cars from *Oldsmobil*, *Austin* and *Cleveland*. This trend should not only be seen as a rich man's fantasy. These eminent personalities had bought many cars but never owned a Rolls Royce or a Bentley. So, it was not a mere spending spree or to show off. But rather they were connoisseurs and lovers of motor cars. The distinctive features and individual characteristics of each and every car had fascinated many eminent Bengali personalities. Satyajit Ray had also felt this during his younger days when he saw various cars of *Ford*, *Vauxhall*, *Wolseley*, *Austin*, *Opel*, *Morris*, *Humber*, *Dodge*, etc. on the streets of Calcutta.[xxiv] Cars had become quite popular among the doctors of the then Calcutta. Dr. Dwijendra Nath Mitra of the Mayo Hospital owned a Ford. He was a big car enthusiast and it can be understood from his correspondences with his daughter where he mentioned his car winning in a friendly race with a *Minerva*. This car actually belonged to Abanindranath Tagore. He also owned cars of *Overland* and another unknown model. The members of the Tagore family used to own various cars. Rabindranath Tagore owned a *Wolseley*, Dwijendranath Tagore owned a *Ford*, Gaganendranath Tagore owned a *Morse*, Surendranath Tagore owned two cars from *Ford* and one from *Austin*. Rathindranath Tagore owned *Overland* and *Fiat*. Various other eminent Bengali personalities like Acharya Jagadish Chandra Bose, C. R. Das, Asutosh Chowdhury, N. C. Chandra, Shishir Kumar Bhaduri, Prasanta Chandra Mahalanabis, Sir D. P. Sarbadhikary, Dr. Kedarnath Das and others owned cars from leading global manufacturers of that era.

The first motor-car taxi was seen in Calcutta in the year 1906.[xxv] The French Motorcar Company had its office at the Chowringhee Road. Taxis would run on meter from here to all directions of Calcutta. They would even go to the peripheral regions of the city like Dum Dum, Barrackpore, Budge Budge. The standardised fare was eight

annas per mile. The most famous taxi service was called the 'A Company' because all their vehicles had numbers starting with A. They had eighty to ninety taxis altogether and their garage was at Mullen Street. The drivers were mainly Bengali people who enjoyed good pay and decent commissions. But gradually with time, their undisciplined lifestyle and heavy drinking made them irregular and irresponsible drivers. Thus, after a certain point of time, the Bengalis were replaced by Sikhs who proved to be far better and dependable drivers. At the very end of the British reign, the taxi fare in Calcutta was a minimum of eight annas and for every quarter mile it was two annas. The first horse-pulled bus was seen on the streets of Calcutta in 1830. In the month of November in 1830, three horse-pulled buses were started from Esplanade to Barrackpore. Not much information is found on how long this bus service existed in Calcutta. The first motorised bus started to operate in Calcutta in 1922.[xxvi] The introduction of buses in Calcutta happened due to several reasons. Starting from the previous decade, Calcutta was rocked by the ongoing national movements against the British. Mahatma Gandhi had launched the Non-Cooperation movement that resulted in strikes being observed by the tram workers on a regular basis. Tram services were hit and the daily commuters had to face a lot of problems in those turbulent times in absence of the most effective conveyance system. In this backdrop, the companies and firms which had goods-carrying motorised lorries, made temporary sitting arrangements on them to facilitate conveyance for the officials, employees and personnel. There were a few designated stoppages from where the 'babus' of these companies were collected by these converted lorries and transferred to their destinations. These vehicles did not have low floors making it difficult for middle aged persons to climb aboard. In this scenario, realising the prospect of making profits, the lorry owners obtained the necessary permission from the office of the Police Commissioner of Calcutta to run these vehicles as means of transporting passengers.

Benches for sitting were placed on the floor or the lorries and ladders were installed to make climbing aboard easy for the passengers. The roofs were covered to protect the passengers from the blazing tropical sun. The passengers had to purchase tickets to ride on these 'buses'. The system proved to be very profitable, prompting the Commissioner to issue more such permits to the lorry owners. Various new such 'buses' were launched on the streets of Calcutta. A very important event in this regard was the launch of public buses by Walford Company. Within a short span of time, they became the major bus operator in Calcutta and it is this Walford Company which introduced double-decker buses in Calcutta. The main bus depot was located near Lalbazaar, towards the east of Bentinck Street.[xxvii] The double-decker buses of Walford Company did not have a roof on its upper deck which made journey comfortable for its passengers during the summers with an open deck offering a lot of breeze.[xxviii] During the monsoons, people would be seen sitting with their umbrellas over their heads in times of torrential downpour. Such was the popularity of these buses, that many people would travel from Kalighat to Shyam Bazaar and back just to enjoy the comfortable ride it provided for its passengers. The first double-decker bus of the Walford Company started operating in the year 1926. At one time, they had around sixty five buses operating in Calcutta. A Muslim gentleman by the name of A. Sovan was the first to start bus operations between proper Calcutta and its downtown and peripheral areas. The bus services introduced by him between proper Calcutta and its outskirts were however not regular. In 1926, Walford Company took the initiative to operate buses from Calcutta to its outskirts and surrounding regions. The Calcutta Tramways also started such services and soon the other operating companies followed suit thus developing the connectivity between Calcutta and those regions. The number of buses that plied in Calcutta in 1924 was 55; the number increased to 280 in 1925.

References

i Paul Mantoux, *The Industrial Revolution In The Eighteenth Century: An Outline of the Beginnings of the Modern Factory System in England*, trans. Marjorie Vernon (London: Jonathan Cape, 1928), 311-18.

ii Daniel R. Headrick, *Technology: A World History* (New York: Oxford University Press, 2009), 119.

iii Charles Singer *et al*., ed., *A History Of Technology Volume V The Late Nineteenth Century* (London: Oxford University Press, 1958), 431.

iv *The Bengalee*, December 23, 1865.

v Ibid.

vi Ibid.

vii S. W. Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth* (Edinburgh: T. And A. Constable, 1916), 249-50.

viii Siddhartha Ghosh, *Kaler Shahar Kolkata* (Kolkata: Ananda Publishers Private Limited, 1991), 164.

ix Ibid.

x P. S. A. Berridge, *Couplings to the Khyber* (Newton Abott: David & Charles, 1969), 65-76.

xi Ghosh, *Kaler Shahar Kolkata*, 166.

xii *Journal of the Photographic Society of India*, July 1899.

xiii "Vintage Car Race," *The Statesman*, 1964.

xiv "The Motor Car in Calcutta," *The Empress*, September 1, 1904.

xv *Amrita Bazar Patrika*, April 23, 1900.

xvi Ibid., November 10, 1900.

xvii Ibid., February 16, 1902.

xviii The Statesman July 3 1904.

xix Ibid., July 24 1904.

xx Ibid.

xxi *The Statesman*, February 28, 1904.

xxii Ibid.

xxiii *List of Motor Vehicles Registered in Calcutta* (Calcutta: Bengal Secretariat Book Depot, 1925).

xxiv Satyajit Ray, *Jakhan Choto Chilam* (Calcutta: Ananda Publishers, 1982), 17.

[xxv] Radharaman Mitra, *Kolikata Darpan* (Calcutta: Subarnarekha, 1952), 189.

[xxvi] Ibid., 189-90.

[xxvii] Ibid.

[xxviii] Ibid., 189.

CONCLUSION

Transport is an important infrastructure inevitable for the development of a country and evolution of its society. The progress of a country depends upon the availability of a viable mode of transport. Modern society is based on the foundation created by transportation in earlier era. In the previous centuries, with the gradual evolution of modern transport, distances between settlements decreased to a great extent thus facilitating a whole lot of humanly interactions, as well as moulding prevalent social and cultural aspects. And this evolution led to the emergence and development of modern society that we see today.

The development of Calcutta as a city has to be understood in the context of the dominance-dependence relationship that used to exist between an imperial power and her colony. In the post-Industrial Revolution phase, industrialisation accelerated urbanisation in the metropolitan society of Europe. In the colonial society, the urbanisation that took place was dependent on the need of the metropolitan economy. Calcutta, which was one of the earliest colonial settlements of the British was used by them primarily as a centre for organising the linkages necessary for extracting resources from the vast hinterland of the Indian subcontinent; resources that were needed for the development of the British economy. The nature of these linkages influenced the city's pattern of growth. If we carefully examine the urban transport system of Calcutta that was modelled by the British, we would see that the tram was initially the primary mode of mass commutation, a vehicle which carried masses of people every day. The motorised buses later replaced the trams in this capacity. The motor cars and motor car taxis became very popular as private modes of transport after their induction into the network and soon the streets of Calcutta were bustling with these beautiful machines. The horse-drawn carriages of the earlier era were not completely relegated to the background with the emergence

of these new modes of transportation. In fact, they ran with their own verve alongside the newest models of scientific and technological inventions that ran on the streets of Calcutta.

The introduction of various modern forms of technology in the colonies directly affected the lives of the local population. On one hand, the colonisers were taking these steps, like developing the transport infrastructure to help their colonial ambitions. But on the other hand, these activities enabled the people of Calcutta to have direct interactions with the modern forms of technology. The things which they had never seen or witnessed before became an integral part of their daily lives. In Calcutta, the process of evolution of the city and its society was completely intertwined and the changes happened in gradual phases. In the first phase, with the beginning of the colonial rule in Calcutta, modern water-based transportation modes arrived. Not just the British East India Company, but also the private merchants from Britain spent their capital to develop the transport network here. Since it was just early days of colonisation and there was a dearth of proper roads, the British decided to utilise the canals and rivers of Calcutta to get their work done. These steps were taken primarily to ensure smooth and unhindered movement of their own mercantile, administrative and military purposes. But it also helped to develop the city of Calcutta by making all areas connected and helping settlements to grow along these communication links. The foundation was thus set for the 'Transport Revolution' to begin in Calcutta. As the British gradually settled, they also had to make Calcutta habitable and connected to ensure a network of seamless communication between the port, the main town, the administrative and military quarters. They started constructing roads which paved the way for horse-drawn carriages to come to Calcutta. While the process was continuing the colonisers used the prevalent indigenous modes of transport like *Palkis*. But once the horse-drawn carriages came to the fore, the popularity of *Palkis* gradually fizzled out. The Bengali community of Calcutta which was so much dependent on this vehicle shunned it for the modern carriages which became a status symbol for the elite

class and a thing of fancy for the common masses. As the city of Calcutta was developing under the British patronage and with increase in population due to influx of people from the rural countryside for livelihood purposes, the city required a new mode of mass transport. *Palkis* and horse-drawn carriages were not adequate to move masses, they were more of a personal mode of transport. In this scenario, the advent of tramways became a watershed in the history of Calcutta. It provided faster mobility to a huge number of people in a short duration of time, thus bringing the concept of public transport to Calcutta. The tram soon became a symbol of the city as more than the colonisers, it became hugely popular among the local population. The trams soon became an integral part of their life and their daily lives became centred around the availability and service of the tramways. The 'Transport Revolution' came to a full circle with the emergence of motor cars in Calcutta. It was the third phase of the gradual change. Unlike in the previous cases, here we see the involvement of private British merchants who popularised automobiles in Calcutta. It became so popular that the elite class of Calcutta (especially the Bengali intelligentsia) became infatuated with cars. It became the mainstay of their private transport, eclipsing their fondness or horse-drawn carriages or even *Palkis*. Calcutta became a complete city when motorised buses were introduced as it supplemented the trams as another mode of mass mover. I call this entire phenomenon a 'Transport Revolution' comprising of all the phases of change and having a profound impact on the city of Calcutta and its society.

In spite of witnessing such tremendous developments in the colonial period, the city and its transportation saw a steady decline in the post-Independence era. The once burgeoning city stumbled upon and faltered with gradual progression of time. Calcutta as a city had reached heights of development and modernity much earlier in the British era. After they departed, it decayed. The excessive pressure on the infrastructure of Calcutta was due to the steady influx of refugees from East Pakistan (modern Bangladesh) following the Partition. It resulted in the

general infrastructure (including that of the surface transport) collapsing due to its inability to handle the pressure. Even then the system survived and there were few developments in the urban transport through the introduction of Circular Railway and the modern underground Metro Railway in the 1980s. But sadly, the original conveyance systems, most importantly the network of trams has become almost obsolete in present day Kolkata. In the last few decades, the network of tramways has been decreased and tram routes withdrawn to facilitate building of broader arterial roads and thoroughfares. This age-old commutation system is being systemically ignored and allowed to die a 'slow death'. On the other hand, many of the Western countries have generally preserved their tram networks (most of which originated at the same time as in Calcutta). Instead of uprooting them, they have modernised and even expanded the spread of the tram networks and linked them with other railway networks to facilitate an excellent network of eco-friendly transportation. Ultra-modern, low floor, non-polluting rakes have been introduced on the refurbished tram tracks. Another very significant policy that can be undertaken by the State Government is popularisation of bicycles; another trend that has emerged in the West and even in many Asian countries in the recent years. A lot of stress is being given on the damaging air pollution that plagues modern urban settlements in general. With the increasing focus on environmental issues in the form of academic studies, debates, protest movements, conferences and so on, it has been found that bicycle can be a very eco-friendly mode of transport due to its non-polluting nature. In foreign countries, the respective countries have taken up this issue seriously and popularised the use of bicycles amongst common people. They have created separate lanes for bicycles on all major roads and thoroughfares in their cities to avoid friction with fast moving vehicles. Also, demarcated stands for bicycles have been made compulsory in majority of the administrative buildings, educational institutions and other areas of prominence. Even the famous personalities, celebrities and people who enjoy adulation in public circles are using bicycles to commute as

symbolic efforts to raise awareness amongst the general populace. If these things can be replicated here, the alarming levels of air pollution and degradation can be checked. It will also benefit the health of citizens, thus fulfilling the criterion of environmental conservation and sustainability.

BIBLIOGRAPHY

Manuscript Sources

- *Proceedings of the Government of India,* Finance Department (New Delhi: National Archives of India).

- *Proceedings of the Government of India,* Foreign Department (New Delhi: National Archives of India).

- *Proceedings of the Government of India*, Home Department (New Delhi: National Archives of India).

- *Proceedings of the Government of India*, Military Department (New Delhi: National Archives of India).

- *Proceedings of the Government of India*, P. W. D Department (New Delhi: National Archives of India).

- *Proceedings of the Hon'ble the Lieutenant Governor of Bengal*, Judicial Department (Kolkata: Directorate of State Archives).

Printed Works

- Arjun Appadurai, ed., *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge: Cambridge University Press, 2013).

- Anindita Ghosh, *Claiming the City: Protests, Crime, and Scandals in Colonial Calcutta, c. 1860-1920* (New Delhi: Oxford University Press, 2016).

- Ashok Mitra, Teen *Kuri Dash* (Kolkata: Dey's Publishing House, 1990).

- K. Ray, *A Short History of Calcutta: Town and Suburbs: Census of India, 1901, Volume VII, Calcutta, Part I* (Calcutta: Bengal Secretariat Press, 1902).

- Abhijit Saha, *Rajpathe Tram: Biborton Obhighat O Kolkatar Somajjibon 1873-1947* (Kolkata: Bookpost Publication, 2022).

- Atul Sur, *Kolkata* (Kolkata: Sahityaloke, 2016).

- Bibhutibhushan Bandopadhyay, *Bibhuti Rachanabali: Prothom Khondo* (Kolkata, Mitra & Ghosh, 1941).

- Bipan Chandra, *India's Struggle For Independence 1857-1947* (New Delhi: Penguin Books, 1989).

- Bidisha Chakraborty and Sarmistha De, *Calcutta in the Nineteenth Century: An Archival Exploration* (New Delhi: Niyogi Books, 2013).

- Bhabotosh Dutta, *Aat Doshok* (Kolkata: Protikshan, 1988).

- Benoy Ghosh, *Kolkata Saharer Itibritta* (Calcutta: Bak Sahitya Pvt. Ltd., 1975).

- Charles Singer, et. Al., ed., *A History of Technology Volume V The Late Nineteenth Century* (London: Oxford University Press, 1958).

- Dalia Chakrabarti, *Colonial Clerks: A Social History of Deprivation and Domination* (Kolkata: K. P. Bagchi & Co., 2005).

- Douglas Dewar, *In the Days of the Company* (Calcutta: Thacker & Spink, 1920).

- Daniel R. Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850 – 1940* (New York: Oxford University Press, 1988).

- Daniel R. Headrick, *The Tools Of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981).

- Daniel R. Headrick, *Technology: A World History* (New York: Oxford University Press, 2009).

- Dennis Kincaid, *British Social Life in India* (New Delhi: Rupa Publications India Pvt. Ltd, 2015).

- Francis T. Underhill, *Driving For Pleasure: Or The Harness Stable And Its Appointments* (New York: D. Appleton And Company, 1896).

- Gordon Johnson, ed., *The New Cambridge History of India Vol. 2* (Cambridge: Cambridge University Press, 1998).

- H. Beverley, *Report On The Census Of The Town Of Calcutta* (Calcutta: Bengal Secretariat Press, 1876).

- Henry T. Bernstein, *Steamboats On The Ganges: An Exploration in the History of India's Modernization through Science and Technology* (Calcutta: Orient Longman, 1960).

- H. E. Busteed, *Echoes From Old Calcutta: Being Chiefly Reminiscences Of The Days Of Warren Hastings, Francis And Impey* (London: W. Thacker & CO., 1908).

- H. E. A. Cotton, *Calcutta Old And New: A Historical & Descriptive Handbook To The City* (Calcutta: W. Newman & Co., 1907).

- Ishita Banerjee Dube, *A History of Modern India* (New Delhi: Cambridge University Press, 2015).

- John Bach, *A Maritime History of Australia* (Melbourne: Thomas Nelson and Sons, 1976).

- Jean Deloche, *Transport and Communications in India Prior to Steam Locomotion Volume I: Land Transport*. Translated by James Walker (Delhi: Oxford University Press, 1993).

- Jean Baptiste Tavernier, *Travels In India* (London: Macmillan and Co., 1889).

- Kallol Bandopadhyay, *Kolkata Mahanagari Ebong Sonnihito Onchol Somuhe 1942 Saler August Andolon* (Kolkata: Progressive Publishers, 2003).

- Kathleen Blechynden, *Calcutta Past And Present* (London: W. Thacker & Co., 1905).

- Krishno Dhar, *Kolkata Teen Shatak* (Kolkata: Paschimbanga Bangla Academy, 1989).

- Kaliprasanna Singha, *Hutom Pyanchar Naksha* (Kolkata: Ananda Publishers Private Limited, 2008), 101.

- Kshitindranath Thakur, *Kolikatae Cholafera: Sekale Ar Ekale* (Kolkata: Kalpan, 1988).

- Leela Majumdar, *Pakdondi* (Kolkata: Ananda Publishers, 2017).

- Monkland, *Life in India; Or, The English At Calcutta Vol. II* (London: Henry Colburn, 1828), 195.

- Nirmalchandra Bhattacharyya, *Bismrito Bangla* (Kolkata: Dey's Publishing House, 2007).

- Nisith Ray and Ranjit Roy, ed., *Bengal Yesterday And Today* (Calcutta: Papyrus, 1991).

- Oneil Biswas, *Calcutta & Calcuttans* (Calcutta: Firma KLM Private Ltd., 1992).

- Premankur Atarthi, *Mohasthobir Jatak: Prothom Porbo* (Kolkata: Dey's Publishing, 1981).

- P. S. A. Berridge, *Couplings to the Khyber* (Newton Abott: David & Charles, 1969).

- Protiva Bose, *Jiboner Jolchhobi* (Kolkata: Ananda Publishers, 2018).

- Punyalata Chakraborty, *Ekal Jokhon Shuru Holo* (Kolkata: Dey's Publishing, 2007).

- Partho Datta, *Planning The City: Urbanization and Reform in Calcutta c. 1800 - c. 1940* (New Delhi: Tulika Books, 2012).

- Paul Mantoux, *The Industrial Revolution In The Eighteenth Century: An Outline of the Beginnings of the Modern Factory System in England*, trans. Marjorie Vernon (London: Jonathan Cape, 1928).

- P. Thankappan Nair, ed., *British Social Life In Ancient Calcutta (1750 to 1850)* (Calcutta: Sanskrit Pustak Bhandar, 1983).

- P. Thankappan Nair, ed., *Calcutta In The 19th Century (Company's Days)* (Calcutta: Firma KLM Private Ltd.).

- Pradip Sinha, *Calcutta In Urban History* (Calcutta: Firma KLM Private Ltd., 1978).

- Raj Narayan Basu, *Se Kal Ar E Kal* (Calcutta: J. N. Vidyaratna & The New Bengal Press, 1878).

- Ranabir Ray Choudhury, *Calcutta A Hundred Years Ago* (Calcutta: Statesman House Publication, 1987).

- Ranabir Ray Choudhury, *A City in the Making: Aspects of Calcutta's Early Growth* (New Delhi: Niyogi Books, 2016).

- Ranabir Ray Choudhury, *The Shaping of Modern Calcutta: The Lottery Committee years, 1817-1830* (New Delhi: Niyogi Books, 2022).

- Raja Binaya Krishna Deb, *The Early History and Growth of Calcutta* (Calcutta: Romesh Chandra Ghose, 1905).

- Ranjan Gupta, ed., *Smritimanjusha* (Kolkata: Dey's Publishing House and School of Women Studies, Jadavpur University, 1999).

- Robert Ivermee, *Hooghly: The Global History of a River* (Noida: HarperCollins Publishers, 2021).

- Ramzan Ali Khan, *Amar Dekha Kolkata* (Dhaka: Monolobha, 1989).

- Reverend Father James Long, *Calcutta And Its Neighbourhood: History of people and localities from 1690 to 1857* (Calcutta: Indian Publications, 1974).

- Radharaman Mitra, *Kolikata Darpan* (Calcutta: Subarnarekha, 1952).

- Sumanta Banerjee, *Memoirs of Roads: Calcutta from Colonial Urbanization to Global Modernization* (New Delhi: Oxford University Press, 2016).

- Sumanta Banerjee, *The Parlour And The Streets: Elite and Popular Culture in Nineteenth-Century Calcutta* (Calcutta: Seagull Books, 2019).

- Sutapa Bhattacharyya, *Meyeder Smritikatha* (Kolkata: Signet Press, 2017).

- Santosh Chattopadhyay, *Palki Theke Patal Rail* (Kolkata: Dey's Publishing House, 2007).

- Sukanta Chaudhuri, ed., *Calcutta The Living* City, Vol- 1: *The Past* (Calcutta: Oxford University Press).

- Swati Chattopadhyay, *Representing Calcutta: Modernity, Nationalism and the Colonial Uncanny* (New York: Routledge, 2006).

- Sachin Das, *Ek Poisar Tram* (Kolkata: Dey's Publishing, 2016).

- Siddhartha Ghosh, *Kaler Shahar Kolkata* (Kolkata: Ananda Publishers Private Limited, 1991).

- Sunil Gangopadhyay, *Prothom Alo* (Kolkata: Ananda Publishers, 2013).

- Sunil Gangopadhyay, *Sei Samay* (Calcutta: Ananda Publishers, 2015).

- S. W. Goode, *Municipal Calcutta: Its Institutions In Their Origin And Growth* (Edinburgh: T. And A. Constable, 1916).

- Siddhartha Guha Ray, *Calcutta Tramwaymen: A Study of Working Class History* (Kolkata: Progresssive Publishers, 2019).

- Shibram Kumar, ed., Kolkatar Football (Kolkata: Probhabati Prokashani, 2002).

- Sisir Mitra, *A Public Facility: Its Management and The Workers* (New Delhi: People's Publishing House, 1980).

- Sunil Kumar Munsi, *Geography Of Transportation In Eastern India Under The British Raj* (Calcutta: K. P. Bagchi & Compnay, 1980).

- Satyajit Ray, *Jakhan Choto Chilam* (Calcutta: Ananda Publishers, 1982).

- Sumit Sarkar, *Writing Social History* (New Delhi: Oxford University Press, 1997).

- Suvobrata Sarkar, *Let There Be Light: Engineering, Entrepreneurship and Electricity in Colonial Bengal, 1880-1945* (UK: Cambridge University Press, 2020).

- Sukumar Sen, *Diner Pore Din Je Gelo* (Kolkata: Ananda Publishers, 1984).

- Sripantha, *Kolkata* (Kolkata: Ananda Publishers Private Limited, 1999).

- Tuhinshubro Bhattacharyya, *Shohor Kolkatae Rabindranath* (Kolkata: Patralekha, 2015).

- Thomas Twining, *Travels in India A Hundred Years Ago With A Visit To The United States: Being Notes and Reminiscences* (London: James R. Osgood, 1893).

- William Bridges Adams, *English Pleasure Carriages; Their Origin, History, Varieties, Materials, Construction, Defects, Improvements, And Capabilities: With An Analysis Of The Construction Of Common Roads And Railroads, And The Public Vehicles Used On Them: Together With Descriptions Of New Inventions* (London: Charles Knight & Co., 1837).

- W. H. Carey, *The Good Old Days of Honorable John Company: Being Curious Reminiscences During The Rule Of The East India Company From 1600 To 1858* (Calcutta: Queens Book Company, 1882).

Journals, Newspapers and Periodicals

- *American Ethnologist*
- *History Workshop Journal*
- *Journal Of The Asiatic Society*
- *Volume Of The Indian Science Congress Association*
- *The Indian Economic and Social History Review*
- *Urban History*
- *The Calcutta Municipal Gazette*
- *Amrita Bazar Patrika*
- *Anandabazar Patrika*
- *Bharat Sangskarak*
- *Ei Samay*
- *Saptahik Sangbad*
- *The Bengalee*
- *The Empress*
- *The Statesman*