# THE BUILDING OF THE BHOR GHAT RAILWAY INCLINE IN WESTERN INDIA IN THE MID-19TH CENTURY

## A CONSTRUÇÃO DO GRANDE DECLIVE DO CAMINHO DE FERRO EM BHOR GHAT, NA ÍNDIA OCIDENTAL, EM MEADOS DO SÉCULO XIX

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## Abstract Resumo

The successful construction, 1856-1863, of the Bhor Ghat railway incline to carry the southeastern line of the Great Indian Peninsula Railway (GIPR) through the precipitous Western Ghats was one of the most difficult feats of mid-19th century engineering The end result was a pivotal development in the history of Britain?s Indian Empire. The formidable 15 mile incline with a 1 in 37 gradient in its steepest area, and a reversing section to handle the most difficult stretch was preceded by arduous surveys and succeeded by considerable repair work because of landslips and collapsed structures. Indian workers in tens of thousands up to an average daily maximum of 40,000 men, women and children in 1860 and 1861 were required. The death toll (some 25,000) from diseases and accidents was enormous, and the abilities (organizational and technical) and endurance of the supervising engineers were stretched to their utmost.

O sucesso da construção do caminho de ferro de Bhor Ghat (1856-1863), com uma grande inclinação, para passagem da linha sudeste da Great Indian Peninsula Railway (GIPR) através dos precipícios de Western Ghats, foi um dos feitos mais

difíceis da engenharia do século XIX. O resultado final foi um desenvolvimento fundamental na história do Império Britânico na Índia. A formidável inclinação, com 15 milhas, e um gradiente de 1 em 37 na sua área mais inclinada, e com uma secção para inversão na passagem mais difícil, foi precedida por levantamentos árduos e exigiu consideráveis trabalhos de reparação, devido aos constantes deslizamentos de terras e ao colapso de estruturas. Foram necessários dezenas de milhares de trabalhadores indianos, com uma média diária máxima de 40 mil homens, mulheres e crianças, entre 1860 e 1861. O número de mortos, quer por acidentes como por doença, foi enorme (cerca de 25 mil), e as competências (técnicas e organizacionais) e resistência dos supervisores foram levadas aos limites.

# The building of the Bhor Ghat Railway Incline in western India in the mid-19th century

Ian Kerr



This paper focusses on the the construction, 1856-1863, of the Bhor Ghat railway incline to provide the permanent way of the southeastern line of the Great Indian Peninsula Railway (hereafter GIPR) through the precipitous Western Ghats: a construction project that ranks among the most demanding and important accomplishments of mid-19th century civil engineering. The building of the formidable 15 mile incline with a 1 in 37 gradient in its steepest area, and a reversing section (see figure #4) to handle the most difficult stretch, was preceded by extended deliberation and arduous surveys, and succeeded by considerable repair work because of landslips and collapsed structures—indeed there is a continuing history of major engineering works on the Bhor Ghat incline through the 20th century including the elimination of the reversing station in 1928 by building three additional tunnels. Indian workers in tens of thousands were required. The death toll from diseases and accidents was enormous, and the abilities and endurance of the supervising engineers stretched to their utmost.[1] Figure # 1 provides a sectional map and diagram of the railway incline.

Completion of the Bhor Ghat railway incline required demanding inputs ranging from huge requirements for labour to organizational and engineering skills of the highest order. The management of labour, and civil and mechanical engineering (technology in the broadest sense encompassing knowledge and

1 Some pages about the Bhor construction can be found in Ian J. Kerr, *Building the Railways of the Raj: 1850-1900* (Delhi: Oxford University Press, 1995, paperback ed., 1997; Kerr, "Labour Control and Labour Legislation in Colonial India: A Tale of Two, Mid-Nineteenth Century Acts", *South Asia. Journal of South Asian Studies* XXVII, 1 (April 2004): 7-25; Kerr, *Engines of Change: The Railroads That Made India* (Westport: Praeger, 2007; 2nd ed.; Hyderabad: Orient BlackSwan, 2012) but no full-scale study exists as yet.

practice, tools and machines) anchored in British experience had to be transferred and adapted to a vastly different physical and cultural setting thousands of miles away. Much had to be learned from hard-gained experience on the Bhor Ghat itself. The engineers (the "transfer agents" in Headrick's terminology) had nothing to guide them in the Indian context, and virtually nothing from elsewhere in the world.[2] The consulting engineer for railways to the Government of the Bombay Presidency wrote in 1855 "there is nothing as far as I am aware of in any English Railway which can be looked upon as a parallel undertaking".[3] A late 19th century author wrote:

> There are probably but few travellers now daily passing up and down the magnificent Thul and Bhore *ghat* inclines, quietly seated in comfortable railway carriages, who can at all adequately realise the extraordinary nature of the obstacles which have been so succesfully overcome, and the great skill and daring of all those engaged—especially during the first years—in shaping and carving out of the rocky mountain sides those wide and luxurious roads on which they now so easily and securely travel.[4]



The conception and construction of the incline was the compelling story of death, struggle, suffering, perseverance, heroism, brutality, venality, ingenuity and eventual triumph played out on a larger-than-life scale for almost two decades. The Indians—men, women and children—must be at the centre of the story because they did most of the work (and most of the dying—perhaps 25,000 over the course of the project) but some fascinating Britons were also present. The latter included the Chief Engineer, James John Berkley (1819-62), formerly a trusted associate of Robert Stephenson, who died an early death in considerable measure because of his exertions on the Ghats; William Frederick Faviell (1822-1902), of whom it was said he treated his workpeople like dogs, who took and then abandoned the contract to build the incline; Solomon Tredwell who took over the contract after Faviell and then died from a disease acquired on his first visit to the line of works; and the remarkable Alice Tredwell, Solomon's wife, who continued the contract and saw it through to a successful conclusion thanks to the labours of her two resident agents, the former GIPR engineers S. Adamson and G.L. Clowser.

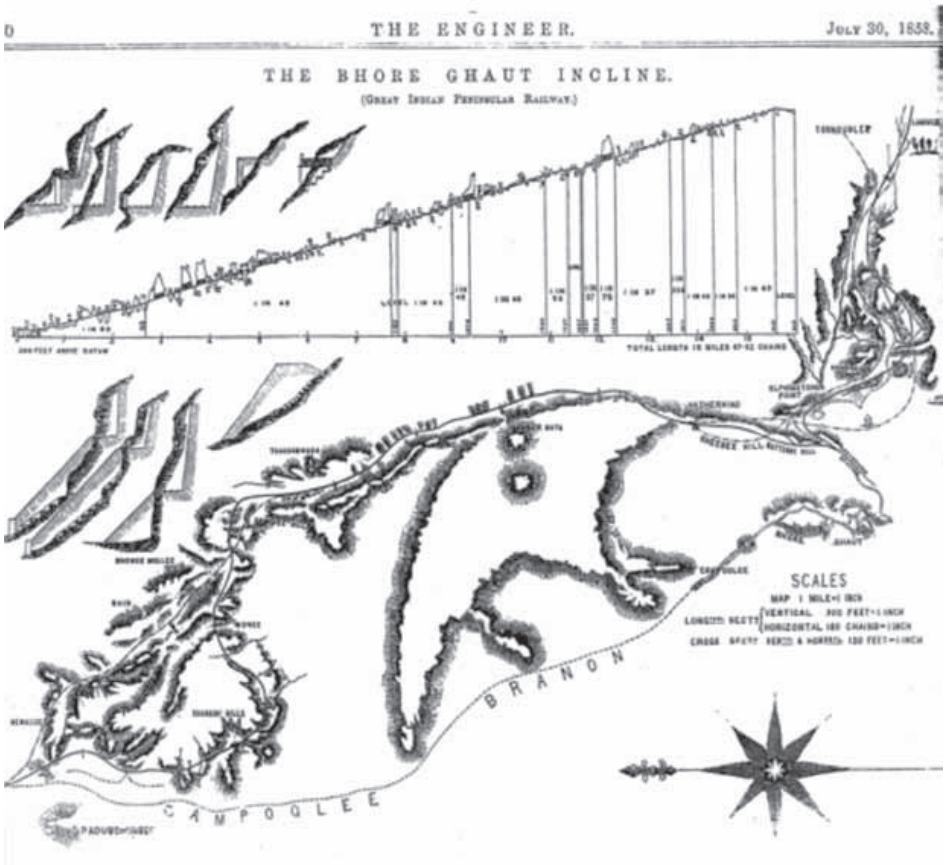
2 Daniel R. Headrick, *The Tentacles of Progress. Technology Transfer in the Age of Imperialism, 1850 – 1940* (New York: Oxford University Press, 1988), pp. 9-13.

3 India Office Library and Records, British Library, L/PWD/d/3/251, Bombay Railway Letters, #11, 19 Mar. 1855, enclosures, item 464.

4 G.W. Macgeorge, *Ways and Works in India. Being an account of public works in that country from the earliest times up to the present days* (Westminster: Archibald Constable and Company, 1894), p. 358. This author provides some twenty pages of descriptive material about the Bhor and Thal inclines but the Indian workers and the British engineers appear primarily as part of aggregate statements.

The Bhor project provides an intrinsically dramatic story set in a colonial situation and a harsh, socio-spatial environment. A contextualized microhistory adopting Frederick Cooper's dictum that historians should have "a willingness to change focus back and forth from the intimacy and complexity of relationships in specific places and their connections to distant places and long-term processes of change . . ." enables one to detail the complex interactions between the human actors, their institutions, their technologies, their work processes, and the physical environment in which they worked and sought to subdue.[5] In short, one can tell a compelling story and explore certain analytical issues while doing so.

Figure 1 - The Bhor Ghat Incline, sectional map and diagram






The Bhore incline was an exercise in imperial engineering, what one writer in the *Engineering Magazine* in 1899 referred to as "a more certain and enduring form of attack than military power, and that the railway, the canal and harbour are the real weapons in the conquest of a colony".[6] Roads, railways,

5 Frederick Cooper, "African Labor History", in *Global Labour History. A State of the Art*, ed. Jan Lucassen (Bern: Peter Lang, 2006, 2nd ed. 2008), p. 94.

6 Quoted in Casper Andersen, "'The Civilizers'. Consulting Engineers, Imperialism, and Africa, 1880-1914", Ph.D. thesis, Department of the History of Ideas, University of Aarhus, 2009, p. 39.

telegraphs, bigger and better harbours, fortifications, government buildings, and hydraulic works provided the material infrastructure upon which the political and economic control of a colony was secured and exploitative possibilities enhanced. To use Daniel Headrick's term, infrastructural projects were among the "Tools of Empire".[7]

Each project, each major public work, had to be constructed via work-processes that typically were labour-intensive in character. The demands for labour were substantial: substantial in their cumulative aggregations, impressively large in their localized demand for workers within short time periods at particular sites. Railway construction in India in the last half of the 19th century may have employed a cumulative ten million people.[8] Stromquist may overstate when he writes "railroad construction workers became the preeminent migratory workers" but there is no doubt railway building figured large among the infrastructural projects of empire.[9]

Each project, moreover, involved technological transfers from the metropolitan power to the colony, from core to periphery. That which was transferred included concepts of what was to be built—the very idea of a dam or railway—to the practice, techniques and tools needed to do the actual building. Most fundamentally, knowledge was transferred: knowledge that existed in a multiplicity of forms from the abstract to the specific, from the idea, the template, of what a harbour, dam or railway should be to the tools and machines that represented objectified knowledge, and onwards to the knowledge needed to use the tools and the machines; from what practice might be, to what was practiced.[10] It was through these complex transfers and/or adaptations of existing African or Asian technologies utilized within particular labour processes that an imperial infrastructure project came into being.



The end result was an example of technological transfer but the labour processes that created that result also involved technological transfers—be it in the form of exogeneous means of production (e.g., a steam dredge or an electric dynamo), in the form of a new standard for the quality of an earthen embankment, or a new grouting technique to seal a dam. Equally if not more important was the transferral of managerial technologies—"bodies of techniques, structures and

This fascinating thesis is now a book: *British Engineers and Africa, 1875–1914* (London: Pickering & Chatto, 2011).

7 Daniel R. Headrick, *The Tools of Empire. Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981); also Headrick *Power over Peoples: Technology, Environments, and Western Imperialism, 1400 to the Present* (Princeton: Princeton University Press, 2009) and his *The Tentacles of Progress*.

8 Kerr, *Building the Railways of the Raj,* esp. pp. 196-226.

9 Shelton Stromquist, "Railroad Labor and the Global Economy: Historical Patterns", in *Global Labour History. A State of the Art*, ed. J. Lucassen (Bern: Peter Lang, 2006, 2nd ed. 2008), p. 633.

10 I draw inspiration from the ideas presented in Raymond Williams, "Communications Technologies and Social Institutions", in Raymond Williams, ed., *Contact, Human Commuication and Its History* (London: Thames and Hudson, 1981), p. 227.

principles"— literally embodied in the European supervisory transfer experts who used them to provide project management.[11]

Marx would have labelled the physical results "the power of knowledge, objectified" although he also would have recognized the socio-institutional framework that made the physical systems work.[12] Technology is social and material. The relationship is continually recursive. But that, surely, is exactly that with which studies of technology transfers must deal, namely the transferral of reliable knowledge, validated techniques, skills, and devices to societies which had existing means and social relations of production; what Ian Inkster has explored as "useful and reliable knowledge" whose transference and adoption, he argues, "are better explained at the more mundane level of how".[13] Because of imperialism the infrastructural projects were imposed on areas of Africa and Asia but the labour processes through which the projects were built required adaptations between exogeneous and indigeneous forms of production, between localization and globalization because, as Peter Robb puts it, "In some senses, labour is a universal condition, but in many other ways it is plainly various; its situation in India depended on indigenous characteristics as well as colonial *force majeure*".[14]

The Empire in the case of the Bhor Ghat incline was the British Empire, within which India was the crown jewel, but most other European powers or their settler offshoots, e.g., the United States, plus an imperially-minded Japan, had colonies such that on the eve of the First World War most of the world was controlled, directly or indirectly, by a small number of more developed states, the core states in Wallerstein's much used vocabulary.[15] The construction of the infrastructures of the British Empire, and particularly the massive consequences of that for the mobilization and utilization of Afro-Asian labour as suggested above, provides a wider context within which a detailed examination of the Bhor project can be framed.



In the rest of this paper I briefly gloss some of the highlights of the struggle to build a railway line through the Western Ghats where the railway builders (British engineers and overseers, and Indian workers) directed by colonial authorities, encountered and overcame what Hughes conceptualized as a

11 Richard Roberts, "French colonialism, imported technology, and the handicraft textile industry in the Western Sudan, 1898-1918", *Journal of Economic History*, XLVII, 2, (June, 1987), pp. 461 and 471.

12 Karl Marx, *Grundrisse*, translated by Martin Nicolaus (London: Penguin Books), p. 706.

13 Ian Inkster, "Potentially Global: 'Useful and Reliable Knowledge' and Material Progress in Europe, 1474-1914', *The International History Review*, XXVIII, 2 (June 2006), p. 241 *et passim*

14 Wim Ravesteijn, "Between Globalization and Localization. The Case of Dutch Civil Engineering in Indonesia, 1800-1950", *Comparative Technology Transfer and Society*, 5:1 (April 2007), pp. 32-65; Peter Robb, "Labour in India 1860-1920: Typologies, Change and Regulation", *Journal of the Royal Asiatic Society*, 3rd series, 4:1 (April 1994), pp. 52-53.

15 "Core, periphery and semi-periphery". See Immanuel Wallerstein, *The Capitalist World-Economy. Essays by Immanuel Wallerstein* (Cambridge: Cambridge University Press, 1979), *passim*.

technological frontier: "Wherever and whenever nature in her nonanimal manifestations frustrates man in the pursuit of his objectives, there exists a technological frontier. To penetrate the frontier man must develop techniques or a technology allowing him to adapt to, modify, or obliterate nature".[16]

Duration, difficulty, employment totals and significance place the Bhor Ghat project among the greatest feats of 19th century engineering. Additionally, construction of the Bhor incline overlapped with the construction of the nearby, almost as difficult, Thal Ghat incline—nine miles 26 chains with a maximum gradient of 1 in 37—that carried the north-eastern branch of the GIPR through the Ghats, and for which large numbers of workers also were required. As for significance, the two railway inclines were important to the development of western India, and to the overall history of Britain's Indian Empire.[17] For example, the rapid growth of Bombay (Mumbai) in the last half of the 19th century—a development that led Bombay to earn the sobriquet "Gateway of India"—was enabled by the railways' conquest of the Western Ghats. The railway made possible bulk shipment of commodities to and from the expanding port, and from Bombay's similarly enabled cotton textile industry.[18]

Railway construction in India began in 1850. Of the two initial lines, the GIPR (the other was the East Indian Railway in Bengal) from Bombay faced by far the most difficult obstacle. Some 30 miles east of Bombay City the precipitous escarpment of the Western Ghats presented what some had considered to be an insurmountable obstacle to any attempt to establish a rail link directly north-east or south-east from that city to other parts of India. Although the crest of the Ghats was only some 2000 feet above the narrow littoral of India's west coast the ascent was abrupt and devoid of gentle passes that could facilitate the construction of a railway. Figures #2 and #3 provide a cartographic depiction of the routes through the Ghats and the overall development of railways in India during, 1861-1871.



After extended debate and the arduous surveys of various routes, railway inclines at the Bhore and Thal Ghats (other routes were considered) were eventually approved. Over 3000 maps, drawings and cross-sections—many based on surveys personally carried out by Chief Engineer Berkeley—were needed to guide the construction of the Bhor line, construction that began in January of 1856.

Almost eight years later (1863) the Bhor incline was completed and officially

16 Thomas Park Hughes, "A Technological Frontier: The Railway", in *The Railroad and the Space Program. An Exploration in Historical Analogy*, edited by Bruce Mazlish (Cambridge: The M.I.T. Press, 1965), p. 53.

17 On the importance for western India read "Railways in Western India", *Bombay Quarterly Review*, I (Jan.—Apr. 1855), pp. 281-322.

18 Frank Broeze, "The External Dynamics of Port City Morphology: Bombay 1815-1914", in *Ports and Their Hinterlands in India (1700-1950)*, edited by Indu Banga. (Delhi: Manohar, 1992); Meera Kosambi, *Bombay in Transition: The Growth and Social Ecology of a Colonial City, 1880-1980* (Stockholm: Almqvist & Wiksell International, 1986).

Figure 2 - Railway Lines Through the Western Ghat

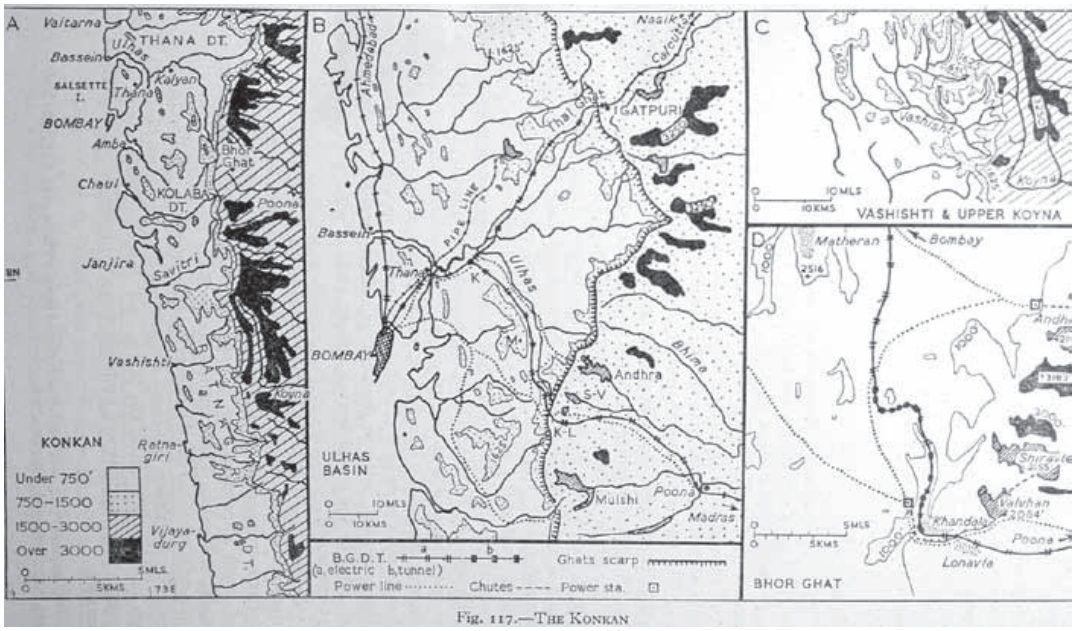
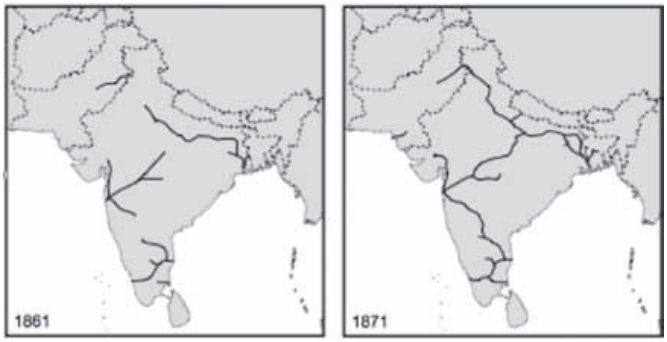



Fig. 117.—The Konkan

Figure 3 - India, Railways, 1861 and 1871






opened at a grand ceremony held at Khandalla (near the crest of the incline) on 21 April 1863. The Governor of Bombay Presidency, Sir Bartle Frere, gave a florid address in which he felt "assured, that in future ages the works of our English engineers on these Ghauts will take the place of those works of their demigods, the great Cave Temples of western India, which have so long, to the simple inhabitants of these lands, been the type of superhuman strength, and of more than mortal constructive skill".[19] Perhaps Frere's words were not all that far of the mark because the completed incline included 25 tunnels, eight arched masonry viaducts, the cutting of 54 million cubic feet of hard rock, and the

19 Frere's speech is reprinted in Ian J. Kerr, ed., *Railways in Modern India* ("Oxford in India Readings. Themes in Indian History"). (New Delhi: Oxford University Press, 2001; paperback ed., 2005), pp. 69-76.

embanking of 67.5 million cubic feet of material at a cost of some £1,100,000 (over £70,000 per mile). Some embankments were over sixty feet high with slopes exceeding three hundred feet. The work force numbered some 10,000 in 1856, surpassed 20,000 in early 1857, and peaked at 42,000 in January 1861.[20] Average employment over the construction period was roughly 25,000, and the total number of deaths likely exceeded 25,000, although detailed records of mortality among the Indian workers was not kept. These figures are larger than those needed to build the iconic Suez Canal (built 1859-1869).[21]

The substantial demand for construction workers set labour in motion across an extensive part of western India, and beyond when people with particular skills were needed. The mobilization of so many people (100,000 at any one time keeping in mind the requirements for labour on the Thal Ghat construction, and for railway lines being built above and below the Ghats) required, in Berkeley's words, "considerable trouble." He went on to write that "the wants of the work, have, however, been supplied by unusual exertions in sending messengers in all directions, and by making advances to muccadums, or gangers, upon a promise to join the work with bodies of men at the proper season".[22]

Work in the precipitous and isolated conditions of the Ghats was extremely dangerous. No footholds existed on some cliff faces, so workers had to be suspended by ropes in order to drill and blast the right-of-way. Some workers lost their hold and smashed into pieces in the ravine below that "had the effect of deterring his fellows, altogether, from working for days".[23] Another hazard was extensive blasting necessitated by the hard rock of the Ghats. Powder accidents



20 Archival record pertaining to the Bhor incline construction exist in quantity in the India Office Library and Records (British Library, notably the L/PWD/3 series of "Bombay Railway Letters and Enclosures"), the National Archives of India (New Delhi) and in the Maharashtrian State Archives (Mumbai). Bombay newspapers also provided accounts of what was happening on the Bhor Ghat. However, a good, initial understanding of the Bhor (and Thal) construction can be found by reading the following: James John Berkeley, "On Indian Railways: With a Description of the Great Indian Peninsula Railway", *Minutes of Proceedings of the Institution of Civil Engineers*, vol. 19 (1859--1860), pp. 604-605; Berkley, *Paper on the Thul Ghaut Railway Incline*: Read at the Bombay Mechanics' Institution in the Town Hall, on Monday, December 10, 1860 (Bombay: Education Society's Press, 1861). Berkeley, *Paper on the Bhor Ghaut Railway Incline of the Great Indian Peninsula Railway*: Read at the Bombay Mechanics' Institution in the Town Hall, on 21 December 1857, with an *Appendix* by A.A. West (Bombay: Education Society's Press, 1863); R.W. Graham, "Description of the Bhore and Thul Ghat Inclines, on the Great Indian Peninsula Railway", 1866. Institution of Civil Engineers, Archives (London), "List of Original Manuscripts and Drawings in Existence", Mss. No. 1161.

21 The Panama Canal, built 1904-1914, required a maximum of 45,000 constructions workers. We have a splendid account of the Panama Canal construction in Julie Green, *The Canal Builders: Making America's Empire at the Panama Canal* (Penguin Press, Penguin History of American Life, 2009) but the more general point is that many infrastructure projects employed large numbers, e.g., Nile Dams such as the first Aswan Dam and the Sennar Dam required ten thousand plus workers at any one time. Railway building in northern Nigeria in 1911 employed 13, 000 in 1911.

22 Berkeley, "On Indian Railways", pp. 604-605.

23 Maharashtrian State Archives [hereafter MSA], PWD (Railways) 1859, vol.25, compilation 206, 'Bhor Ghat Incline. Surrender by Mr. Faviell Of His Contract', E. Swan to Faviell, 3 Nov.1858.

were frequent, and resulted in a heavy loss of life. Falling rocks, slips and cave-ins added to the toll. Many cuttings proved more difficult, dangerous and expensive than expected when "masses of detached rock embedded lying upon the sloping substratum of traprock. . ." "slipped when the stratum in which they were embedded was intersected by the cutting".[24]

Regardless of the hazardous nature of the work itself, it was epidemic diseases that most ravaged the workforce. The Indian workers lived in rudimentary, difficult and often deadly conditions. Despite the heavy precipitation (150–200 inches) during the rainy season, many parts of the Ghat were waterless in the dry (main working) season. Drinking water had to be carried to the worksites. Strong winds buffeted the workers and their flimsy, lean-to dwellings. Poor sanitation led to frequent outbreaks of cholera that mounted in intensity as the size of the workforce grew. Ten workers per day died during an outbreak that started in late 1859 and continued into January of 1860; another that flared up in April–May 1860 killed 25 percent of the European overseers and "of the natives so numerous as to be beyond accurate calculation".[25] Each major epidemic caused the workers to flee, thus slowing or even stopping construction until they returned. "Jungle fever" (likely malaria) also took its toll—when it did not kill people, it disabled them. A contractor's agent reported in 1858 that during the eight month working season the Europeans on site were routinely disabled by sickness more than a quarter of the time.[26]



The conditions on the Ghat bred violence and lawlessness. Many Indian workers (but certainly not all) came from the deprived margins of Indian society—tribals and members of low or untouchable castes—overseen by a rough lot of Europeans among whom racist notions of white superiority were present. Overseer-level Europeans sometimes were non-commissioned military men who had taken their discharge in India when their service with an India-stationed regiment expired. Relationships between the few permanent inhabitants of the Ghat and the seasonal construction workers also were strained. Workers were implicated in robberies and various expedients were suggested for their better control including appointing a *mucaddum* (headperson) for each fifty workers to ensure that they were in their hutments by eight in the evening.[27]

Unrest among the workers intensified when the initial contractor, Faviell, began to convert his paid agents into risk-accepting sub-contractors after Berkeley rejected Faviell's request at the end of the 1856-57 working season (i.e., the first season) for better rates (i.e., more generous schedules in the contract). Faviell's case was based on his view that labour had become more difficult and costly

24 Graham, "Description", p. 20.

25 MSA, PWD (Railways) 1862, vol.6, compilation 317.

26 MSA, PWD (Railways) 1859, vol.25, compilation 206, Appleby to Fowler, 31 Oct. 1858. The rains halted most work except for some tunnelling.

27 MSA, PWD (Railways) 1862, vol.36, compilation 227, 'Robberies in the Vicinity Of the Railway Works on the Ghats'.

to obtain and retain thanks to railway-created demands for labour throughout western India. Berkeley's view was that Faviell and his agents had difficulty obtaining labour because they did not pay well or promptly and because they did not provide much in the way of housing. Berkeley could point to the Thal Ghat construction where labour was more readily obtained, and where the contractors (Wythes and Jackson; the latter died in India before the contract was completed) used more capital intensive techniques. Eventually (March 1859) Faviell was permitted to terminate his contract on favourable terms with a new contract (which was more favourable) subsequently assumed by Solomon Tredwell. His unfortunate story was recounted above, as was the completion of the business end of the contract by his widow, Alice Tredwell supervised on-the-ground by two former GIPR engineers, Adamson and Clowser.

Regardless of the merits of the positions adopted by Faviell and Berkeley, the agents turned sub-contractors had a personal stake in cutting costs and squeezing the workers. Discontent among the workers intensified culminating in an affray at Khandalla in January 1859 when workers, some owed months of wages, became violent after the subcontractors tried to pay out at half the promised rate. A Briton was killed, the colonial authorities became more alarmed particularly in a context where railway building had taken on urgent importance in the light of the mutinies and civil disturbances that had seen the British almost lose control of north India in 1857-58, and legislation was introduced quickly to provide the authorities with greater statutory authority to "empower Magistrates to decide disputes between contractors and workmenn engaged in railway and other public works".[28]



Life and work on the Bhor Ghat continued to be hard, and some unrest persisted. However, there was improvement in the conditions of work, better payment of wages, the size of the workforce did reach its maximum in 1860 and 1861, and the work was completed in 1863 such that Governor Frere and other dignitaries could have their big opening ceremony on the 21st of April 1863.

Even this brief description of some of the highlights of the construction of the Bhore Ghat railway incline suggests its fascination for anyone who wants to explore the ways in which histories of imperialism/colonialism, of railways and technology transfer, and of labour can be made to intersect within a contextualized microhistory of one important infrastructural project—among many examples which can also be investigated and subsequently compared and contrasted—undertaken to advance the interests of the British Empire writ large, and the British Indian Empire specifically. Additionally, the building of this railway incline provides the basis for a compelling narrative full of accomplishment and

28 Kerr, "Labour Control and Labour Legislation" explores the text and context of this legislation, Act IX of 1860.

suffering. This historian, at least, remains committed to the idea that accurately telling a good story is one of the important reasons we write history. Something more of that story is captured in the image below in figure #4.

Figure 4 - The Reversing Station and the “Triumphant” (?) Worker