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The Brickmakers' Strikes on the Ganges Canal in 1848–1849*

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INTRODUCTION

For a long time it seemed indisputable that collective actions of wage labourers in general and strikes in particular were a typically European and American phenomenon, closely linked to the Industrial Revolution and its consequences. Modern imperialism and the concomitant spread of industrialization and modernization brought these phenomena to the rest of the world. Some decades ago, however, an awareness arose that even before that famous watershed in history people knew how to organize a strike.[1] Although this critical reappraisal of the supposed link between the Industrial Revolution and labour tactics led, albeit slowly, to a renewal of interest in the early labour history of Europe, its implications for the labour history of other continents have not yet received the attention they deserve. If we want to take that next step, the question could be formulated as follows: "If strikes could take place in pre-industrial Europe, why not also in other pre-industrial parts of the world?"

At first sight such a question does not seem very useful for India if we follow the line of argument put forward most eloquently by Dipesh Chakrabarty. Since his influential studies from the 1980s on the Calcutta jute-mill workers, the historiography of Indian labour can be characterized – in the words of Deep Kanta Lahiri Choudhury – as follows: "Studies began from the 1880s and characterized the period 1880–1919 as the 'prehistory' of labour mobilization in India and as the period of the emergence of 'community consciousness' within Indian labour."[2]

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1. C.R. Dobson, *Masters and Journeymen: A Prehistory of Industrial Relations 1717–1800* (London, 1980); Catharina Lis, Jan Lucassen, and Hugo Soly (eds), *Before the Unions: Wage Earners and Collective Action in Europe, 1300–1850*, Supplement 2 to the *International Review of Social History* (1994).

2. Deep Kanta Lahiri Choudhury, "India's First Virtual Community and the Telegraph General Strike of 1908", Supplement 11 to the *International Review of Social History* (2003), pp. 45–71, 45–46; cf. Ian J. Kerr, "Working Class Protest in 19th Century India: Example of Railway Workers", *Economic and Political Weekly*, 20 (26 January 1985), PE 34–40, PE 34; Dipesh Chakrabarty, "Communal Riots and Labour: Bengal's Jute Mill Hands in the 1890s", *Past and Present*, 91 (1981), pp. 140–169; *idem*, *Rethinking Working-Class History: Bengal, 1890–1940*

In fact, the idea that the prehistory of Indian labour begins only in the 1880s has a long pedigree which goes from the 1970s and 1980s via Sukomal Sen all the way back to Daniel Houston Buchanan in the 1930s and to Rajani Kanta Das in the first decades of the twentieth century;[3] detailed studies by scholars such as Morris David Morris seem to confirm it.[4] Das started his studies of the Indian workers in 1912, took a degree from the University of Wisconsin in 1916, and for some time was a lecturer in economics at New York University. In his publications, most of which came out in Germany, he traces the first strike in India back to 1882 and the first trade union to 1890.[5] Both Buchanan and Sen essentially agreed with Morris's opinion, although Sen adds the first labourers' petition in 1884 and some earlier strikes, especially the 1862 strike at Howrah Railway Station.[6]

Recent critics of Chakrabarty, especially Rajnarayan Chandarvarkar, have questioned the accepted wisdom that links industrialization, class-consciousness, and labour organization.

> [Such] interpretations of the working classes in general have been severely limiting, but in the case of India, in particular, they proved especially damaging. Economic backwardness, in this reasoning, made the very notion of a working class unthinkable, just as the peculiar institutions of India seemed to place it in a special category of its own. [...] Most crucially, this teleology imposed upon the

(Princeton, NJ, 1989); and for a critique, Subho Basu, "Strikes and 'Communal' Riots in Calcutta in the 1890s: Industrial Workers, Bhadralok Nationalist Leadership and the Colonial State", *Modern Asian Studies*, 32 (1998), pp. 949–983.

3. Rajani Kanta Das, *The Labor Movement in India* (Berlin [etc.], 1923); *idem*, *Factory Labor in India* (Berlin [etc.], 1923); *idem*, *Plantation Labour in India* (Calcutta, 1931); Daniel Houston Buchanan, *The Development of Capitalistic Enterprise in India* (New York, 1934); Sukomal Sen, *Working Class of India: History of Emergence and Movement 1830–1970* (Calcutta [etc.], 1977); *idem*, *May Day and Eight Hours' Struggle in India: A Political History* (Calcutta [etc.], 1988).

4. Morris David Morris, *The Emergence of an Industrial Labor Force in India: A Study of the Bombay Cotton Mills, 1854–1947* (Berkeley, CA [etc.], 1965), p. 110 (the earliest date of a collective action Morris gives is 1875, all others started in the 1880s); *idem,* "The Growth of Large-Scale Industry to 1947", in Dharma Kumar (ed.), *The Cambridge Economic History of India*, vol. 2: *c 1757– c.1970* (Cambridge, 1983), pp. 553–676.

5. Das, *Factory Labor in India*, p. 187 ("the first labor union"; cf. Das, *Labor Movement in India*, p. 14); *ibid.*, p. 190 ("the earliest strikes"); *idem*, *Plantation Labour in India*, p. 95 (first strikes on plantations in 1884).

6. Sen, *Working Class of India*, pp. 75, 78–79. He adds that prior to 1862 "there were also cessations of work in Calcutta by the palanquin-bearers in 1823 and by the river-transport porters in 1853. Subsequently in September 1862, the coachmen of bullock-carts in Calcutta stopped work. Similarly, the meat-sellers under Bombay Municipal Corporation stopped work in 1866. At Ahmedabad also the tailors and brick-field labourers ceased work in 1873. But all these cessations of work by the toilers in different professions should not be confused with the strike of the modern industrial workers like the railway workers' strike in 1862." Without any further reference, Dharma Kumar, ("Regional Economy (1757–1857): South India", in Kumar, *Cambridge Economic History*, pp. 352–375), states that in southern India c.1800 "weavers' strikes were frequent" (p. 368).

> working classes an arbitrary and misleadingly narrow definition as an industrial labour force. In this sense, the industrial labour force was abstracted from its connections with other categories of labour who were proletarianized in nineteenth- and twentieth-century India by similar social processes [...].[7]

Consequently, there is less and less reason to neglect what we might call pre-industrial labour history in the case of India. Nevertheless, this is still an almost completely underdeveloped field.

Not as an explicit attempt to take sides in this discussion, but rather on empirical grounds, Ian Kerr in his *Building the Railways of the Raj* questioned the absence of collective labour resistance in India before 1880[8] and the nature of that protest. Even before 1880, Kerr found a variety of forms of collective resistance by the men and women who built the railways. In his taxonomy, rather loosely formulated, they range from indirect to direct actions and from passive to highly active resistance. All the forms he mentions can be summarized as follows: indirect and passive resistance; disagreement over piece-rates, leading to a withdrawal of labour before an agreement had been reached; absconding with the advances received before the actual work had started; petitioning; stopping work over various issues, of which the most important were payments lower than agreed or than expected, delays in payment, constrainment to use working gear which workers consider awkward or harmful in daily practice (in particular in the case of piece-work); violence against property, such as machines; and violence against persons, including overseers and bosses.

Nearly twenty actions that can be characterized more or less as strikes are mentioned by Kerr for the half century in which the railways were built in India; this represents on average about one strike every two years (see Table 1 overleaf).

It would be wrong to think that Kerr's book is very much focused on these collective actions, however impressive the list that can be derived from it. In fact he stresses that his book "is not a history of worker agency; it is a story of how the British got the railway built. That the workers had agency I accept, but, except tangentially, this book does not seek to explore that agency."[9] Nevertheless he is fairly sure that all the collective actions he has identified have nothing to do with a conscious criticism of nor resistance to large questions such as proletarianization or capitalism, but instead must be interpreted simply as very definite clashes of interests between employers and employed.

If Kerr is right, the question then arises where the tactics and strategies

7. Rajnarayan Chandarvarkar, *Imperial Power and Popular Politics: Class, Resistance and the State in India, c.1850–1950* (Cambridge, 1998), pp. 6–7.

8. Kerr, "Working Class Protest", PE–34, is much more explicit than Ian J. Kerr, *Building the Railways of the Raj: 1850–1900* (Delhi [etc.], 1995).

9. Kerr, *Building the Railways of the Raj*, p. 14. For Kerr's ideas on a proletarian consciousness see *ibid.*, pp. 169, 182, 192.

Table 1. *Strikes and similar collective action by construction workers on public building sites in India (1858/1859–1903)*

Date	Place	Type of workers	Type of action
1858–1859	Bombay, Baroda and Central India Railway (BB&CIR)	Brickmakers	Resistance to the introduction of new brass moulds; later a strike because of a lack of such moulds
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June 1859	Sind Railway	Navvies (Jaisalmeris) Kutch masons	Strike because of arrears in wage payments Strike because of non-acceptance of overseers
1859 (late)	Tanjore	Navvies	Refusal to work for too low wages
1859–1860	Trichinopoly district of Madras	Navvies	Pre-emptive strike in order to raise piece-rates for earthwork
1860	Tapti viaduct of the BB&CIR	Navvies	Strike in order to raise piece-rates
March 1863	Bhore and Thal Ghat	N/A	Disorder and worker unrest
1872	Jhelum Bridge	Divers	Strike for higher wages
March 1878	Vellore Bridge (Madras)	Navvies (coolies of the pariah caste)	Violence against European supervisor

August 1880	Sohan Bridge	Riveters	Strike
1883	Harro Bridge	Divers	Strike for higher wages
1884 rainy season	Narayanganj–Dacca–Mymensingh State Railways	Brickmakers	Strike for higher piece-rates
1886	N/A	N/A	Strike for higher wages
c.1888	Ganges Canal at Mayapur	Stonemasons	Slowdown in order to alter the shift from piece to time work
1889	Sind–Peshin Line	Skilled workers	Strike for higher wages
May 1890	North Arcot district	Navvies	Petition for prompt and full payment of wages
1897–1898	Godavari Bridge at Rajahmundry	Punjabis engaged in well-sinking	Combination to slow down the work speed and thus to prolong the job
1899	N/A	N/A	Strike
1903	Damodar Bridge	Riveters	Strike

Sources: Ian J. Kerr, *Building the Railways of the Raj: 1850–1900* (Delhi [etc.], 1995), pp. 104, 122–123, 144–145, 173, 176–181, 184; *idem*, "Labour Control and Labour Legislation in Colonial India: A Tale of Two Mid-Nineteenth Century Acts", *South Asia*, 27 (2004), pp. 7–25. The following cases only in *idem*, "Working Class Protest in 19th Century India: Example of Railway Workers", *Economic and Political Weekly*, 20 (26 January 1985), PE34– PE40: 1859 Tanjore (PE–36), Bhore and Thal Ghat 1863 (PE–36 and PE–39, n. 27), the 1899 strike (PE–35 and PE–39, n. 14, after Lajpat Jagga's unpublished M.Phil. thesis of 1978; the case in c.1888 in L.R. Nicolls, "Agricultural Engineering in India (VIII)", *Engineering*, 46 (1888), pp. 175–177, 176. Not included are disturbances related to the Santhal uprising and mutiny; Kerr, *Building the Railways of the Raj*, pp. 35–37, 125, 184; G. Huddleston, *History of the East Indian Railway* (Calcutta, 1906), pp. 23–25, 36, 280–281, nor collective actions by enginemen, clerks, signallers, and other railway personnel, as recorded from 1862 onwards by Kerr.

of such collective labour actions had been learnt and how they were improved. In other words, was there – at least from a certain point in time – a tradition, and, if so, how did it develop? Following Kerr's rather scanty suggestions on this point one can envisage three possibilities: this type of collective action was new and started with and because of the railway building in India; or it represents a translation of a general repertoire of resistance from other parts of society, such as peasant unrest; or it represents a tradition vested in professionally migrating skilled workers who offered themselves at public works.[10]

In this essay a series of collective actions will be presented, including several strikes that broke out in the dry season of 1848–1849 among the brickmakers engaged in building the Ganges Canal. The fact, moreover, that these events are reasonably well documented offers some scope to follow up Kerr's carefully and very modestly presented but at the same time truly seminal ideas. The very existence of this rather extensive strike at least suggests there might have been a tradition of collective resistance in India among workers engaged on large public works. As in Europe, it seems that such a tradition existed before the building of the railways, in particular among those who built canals and dykes; this would push the history of collective action much further back in time, as far back indeed as the late Middle Ages in western Europe.[11] If that is an easy conclusion at first sight, only a careful description of such actions can lead us to tackle the much more difficult questions about the mentality and consciousness of those involved, as well as the development over time of their activity. Therefore, the task now is first of all to describe what happened during that 1848–1849 strike. In a few concluding remarks I shall discuss the extent to which these events link up with Kerr's work.

BRICKMAKERS ON THE GANGES CANAL

The Ganges Canal, in Uttar Pradesh, to the north-east of New Delhi, is one of the largest canals in the word. It is all the more remarkable for the

10. Nor should it be forgotten that the employers too developed traditions in dealing with labour unrest, as Kerr shows. The same goes for the government, as is shown by the passing of the Workmen (Dispute) Act (X) of 1860; cf. Kerr, *Building the Railways of the Raj*, p. 184, and *idem*, "Labour Control and Labour Legislation in Colonial India: A Tale of Two Mid-Nineteenth Century Acts".

11. Jan Lucassen, "The Other Proletarians: Seasonal Labourers, Mercenaries and Miners", in Lis *et al.*, *Before the Unions,* pp. 171–194, 179–183; Piet Lourens and Jan Lucassen, *Arbeitswanderung und berufliche Spezialisierung: Die lippischen Ziegler im 18. und 19. Jahrhundert* (Osnabrück, 1999), pp. 23–24; cf. Terry Coleman, *The Railway Navvies: A History of the Men Who Made the Railways* (Harmondsworth, 1968); James E. Handley, *The Navvy in Scotland* (Cork, 1970); Anthony Burton, *The Canal Builders* (London, 1972); and Peter Way, *Common Labour: Workers and the Digging of North American Canals 1780–1860* (Cambridge, 1993).

Figure 1. The Ganges Canal at Roorkee: watercolour (1863) by William Simpson (1823–1899). *British Library, Picture Library, Record no. C6562–04, WD 1012. Used with permission*

fact that it was constructed around the middle of the nineteenth century. The main canal, running from Haridwar to Kanpur, measures 349 miles (562 kilometres) (excluding branch canals) and in 1850 the total cost was estimated at more than 14 million rupees. No wonder it took sixteen years (1839–1854) to finish, although most of the work was done between 1848 and 1854 under Major Proby T. Cautley, who had succeeded Major W.E. Baker as Director in January 1848.

For the construction of the Ganges Canal, its total length had been divided into six sections. The First or Northern Division measured only twenty-four miles but was the most difficult to build because of the high fall, the complicated canal head in Haridwar and the majestic aqueduct over the Solani River. With its twenty-four miles, this First Division covered less than 8 per cent of the total length, but it absorbed 45 per cent of the total estimated cost of the whole canal. Besides, all the experience had to be gained on that First Division.[12] Because, as far as we know, the

12. Proby T. Cautley, *Report on the Ganges Canal Works: From Their Commencement until the Opening of the Canal in 1854,* 3 vols and one atlas (London, 1860), vol. 3, pp. 292–295 (Appendix Q); *idem*, *Ganges Canal* [text in English, Hindi, and Urdu] (n.p., 1854), pp. 8, 12, 20; *idem*, *Estimate of the Probable Expense to be Incurred in Constructing the Ganges Canal Works [...]* (Umballa, 1850), pp. ii–iv. Cf. Robert B. Buckley, *The Irrigation Works of India, and Their Financial Results* (London, 1880), pp. 1–10, 88–112.

labour unrest during the building of the canal took place only in that First Division, I shall restrict this discussion to a brief description of the organization of the work on that Division, and in particular to the brickmaking activities.

This Division starts at Haridwar, where the canal receives its water from the river Ganges, which follows its parallel course to the east of the canal. From Haridwar the canal first runs westwards via Jawalpur and then turns south to Roorkee, where the builders established their headquarters and where, in 1847, an engineering college was set up, to become the basis of a modern university.[13] From Roorkee the canal continues south to Asafnagar Falls and finally to Manglaur, which actually forms part of the Second Division. Roorkee was the scene of the strike of 1848.

From a plan drawn up on 17 June 1848 by Cautley, who wanted to reorganize the central space, we can gain an idea of what Roorkee looked like at the time of the strike. At the centre, not far from the canal that could be crossed by a bridge, were bungalows for the European staff and the workshops, first the old quadrangle with the smithy and iron department and to the west of it the model room quadrangle which was extended to the south for the carpenters. Cautley wanted to place a small portable steam engine in this carpenters shop for lathes and other machinery so that "this Department should in some measure become a school not only for a native workman but for the students in the college". Also in the middle of Roorkee was the college under Headmaster Conductor, H. Bingham; and there was a hospital. On 22 February 1849 Cautley reported that a brick manufactory had been established near the workshop and the model room as there was so much earth from the cutting left over from levelling operations.[14] Around these central brick buildings at the time were "numerous thatched buildings which are in perpetual danger of the fires, which occur in the quarter of the bildars", especially because of the very large collection of wood needed for the carpentry work.[15]

The daily supervision of this First or Northern Division was entrusted to two executive engineers, under the Director. Lieutenant Henry Yule of the Bengal Engineers was responsible for the "Works Department" until 15 April 1848, when he left for Calcutta. His successor was Lieutenant A.G. Goodwyn, who shortly before had had to face the death of his child, fell ill himself, and afterwards joined the Army of the Punjab. Being unable himself to work for quite some time, from 17 October 1848 to 22 March

13. See http://rurkiu.tripod.com.

14. National Archives of India, New Delhi, Military Board [hereafter, NAI, MB], Proceedings, 25 May 1849, 1263–1264; cf. *ibid*., 18 August 1848, 7481–7483; *ibid*., 17 September 1849, 10792–10794; *ibid*., 04 January 1850, 324–326; [Proby T. Cautley,] *Report on the Ganges Canal from Hurdwar to Cawnpore and Allahabad* (Calcutta, 1845), pp. 76–80.

15. NAI, MB, Proceedings, 11 July 1848, 4684–4687; a prophetic observation, as will be shown later.

1849 Goodwyn left the actual running of things to his assistant Thomas Login.[16]

The care of the new "Materials Department" was in the hands of James Finn of the Artillery Regiment, who arrived on 24 September 1847. That is not to say that only the "Works Department" had dealings with the labourers, since Finn in his "Materials Department" had to produce on the spot things like bricks and lime. One could say that the first executive engineer was generally responsible for the earthworks, masonry, and the Roorkee workshops (for sawing, carpentry, and ironwork), while the second saw to production of the bricks and lime needed by his colleague.

The two executive engineers of the First Division were assisted by six assistant executive officers, each at a salary of 250–400 rupees a month plus a marching allowance of 100 rupees at 4 annas per mile (which means 400 miles of monthly marching, on horseback of course, but still a considerable distance). Because each of them was responsible for financial expenditure of 50,000 to 100,000 rupees a month, they all had to provide security of 5,000 rupees each before being entitled to receive any salary.[17] Thomas Login was in charge of the workshops in Roorkee, while Lieutenant A. Allen was the engineer overseeing the timber yard and T.S. Murdoch the iron yard. Two others were attached to the nearby Solani Aqueduct. Second Lieutenant G. Price of the 1st European Regiment Fusiliers oversaw the navvies and James Parker looked after the masonry, while one William Kay was responsible for the works at Ranipur Rao. Because each maintained a bungalow in Roorkee, except for William Kay who lived in Jawalpur, they were at an advantage over most of the canal officers of the other Divisions, who passed most of their time under canvas, as Cautley remarked.[18]

Further, in their Division various assistant executive officers commanded an overseer at 65 rupees a month. All these men were still young during the eventful season 1848–1849, being between twenty-four and thirty-two years old. Overseer Sgt Russell Kelly was attached to the Roorkee workshops, Sgt William Johnstone to the Solani Aqueduct, and Sgt Thomas Martin to the works at Ranipur Rao. James Finn commanded four overseers, the sergeants G.N. Dodd (in Roorkee), Edward Durrant (especially for the brick fabrication in Roorkee), George Barrett (in Mahewar), and George S. Murray (in Salempur).[19] Three Englishmen and

16. NAI, MB, Proceedings, 1 August 1848, 6605; *ibid.*, 3 April 1849, 18181–18182; *ibid.*, 10 April 1849, 18313; *ibid.*, 21 August 1849, 6060–6064; *ibid.*, 8 January 1850, 13700.

17. NAI, MB, Proceedings, 8 May 1849, 1293–1298; *ibid.*, 2 November 1849, 10085–10108; *ibid.*, 23 November 1849, 11314.

18. Cautley, *Report on the Ganges Canal from Hurdwar*, p. 68; NAI, MB, Proceedings, 2 November 1849, 10089–10093.

19. NAI, MB, Proceedings, 5 October 1847, 6621; *ibid.*, 1 May 1849, 90–94; *ibid.*, 21 August 1849, 6060–6064; *ibid.*, 2 November 1849, 10104–10105; *ibid.*, 18 December 1849, 12468–12469;

four Indians were employed in the English offices of the Works and the Materials Departments. The best-paid Englishman there earned 100 rupees a month, the worst was paid 35 rupees, while the salaries of the Indians varied between 25 and 45 rupees a month. If we consider the entire establishment just mentioned, there were (excluding Cautley at 1,000 rupees monthly with a small staff) eighteen Englishmen and three Indians in the higher ranks in the First Division. In the lower ranks another seventy-six Indians belonged to the establishment, with monthly salaries ranging between 4 and 30 rupees. Apart from a master carpenter, a master smith, a master bricklayer and his assistant, a native doctor, and a few *moonshees* (writers), most of them were *chuprassis* (messengers), and *barkandazis* (police constables). The *barkandazis* under their *jemadars* not only secured the personal safety of the establishment, but just as importantly were in charge of guarding the treasury in which the money for wages was kept.

This handful of Englishmen with their Indian staff[20] had to manage the construction with the help of dozens of Indian contractors, who themselves directly or indirectly had hired thousands of Indian workers. The importance of the cooperation among the Europeans as well as between Europeans and Indians is illustrated by the straightforward judgement by Baker about one of the assistant executive engineers:[21]

> I do not consider Mr Kay to be deficient in professional knowledge, but he is wanting in judgement and temper and appears incapable of managing natives or making a proper use of the native agency without which executive works cannot be carried on in this country. As Executive Officer Mr Kay must have the control of assistants (who would be commissioned officers) and overseers, but he has not had the education nor has he the manners and habits which would command the respect or ensure the cordial cooperation of his European subordinates. I would therefore propose that Mr Kay should continue under the orders of Lieutenant

Cautley, *Report on the Ganges Canal from Hurdwar*, pp. 65–66. For Johnstone see also "Building Materials", *Papers Prepared for the Use of the Thomason Civil Engineering College, Roorkee*, no. 1 (Roorkee, 1862, 3rd edn), p. 38; for Allen see NAI, MB, Proceedings, 9 March 1849, 16788–16789. Sometimes other Europeans and a single Indian official too are mentioned in the period under review. They included J.H. Butler, Asst Surgeon from 25 April 1849 (*ibid.*, 11 May 1849, 490), and Luthfoollah Khan, promoted to native doctor on 30 April 1849 (*ibid.*, 29 June 1849, 3456).

20. Apart from the four Indian clerks in the First Division, the canal works employed in all only two Indians in the higher ranks – as Cautley's overview for January 1849 shows: the sub-assistant civil engineers Petamber Sing (superintending the preparation of bricks over fifteen miles at the head of the Fourth Division) and Madho Ram (taking cross sections for the Cawnpore branch canal in the Sixth Division and in May 1849 superintending a brick kiln). See NAI, MB, Proceedings, 1 May 1849, 90–94; *ibid.*, 3 July 1849, 3669. For Indian salaries see *ibid.*, 21 August 1849, 6063.

21. NAI, MB, Proceedings, 5 October 1847, 6618–6619, W.E. Baker on 15 September 1847 about William Kay.

> Yule and that he should be employed during the ensuing cold season in the construction of the dam across the Ranipur Rao.

Concern over the capability of Europeans to oversee Indians also arises from the case of Sergeant Thomas D. Hawthorne.[22] A clerk from Newport in Hampshire, he arrived in India in October 1836 to join the army while not yet twenty-one. Ten years later, Hawthorne was in the Second Company, 4th Battalion Artillery, and taking the opportunity of joining the College of Civil Engineers at Roorkee, he became an assistant overseer on the Third Division of the Ganges Canal in January 1849. He found himself answerable to a German, Philip Volk, very skilled in canal building, but not very proficient in English.

To the indignation of Cautley, who considered "that in receiving men from the Civil Engineers' College, we ought at least to expect a guarantee against drunkenness", Sergeant Hawthorne turned out to be, in the words of his character testimonial, "indolent and indifferent regarding works". He even "took to drinking spirits in latter time, so as to become intoxicated". His misbehaviour was considered to be so grave that a court session was held under Volk's presidency. Its proceedings were witnessed by Beni Purshad, the native doctor attached to the Third Division, Sundul Lal, the *moonshee* attached to Hawthorne's establishment, Muburdust Khan, the *duffadar* of the guard in charge of the treasury, Imambux and Hyder Khan, both *barkandazis* of the same guard, and Godzarr, the sergeant's *chaprassi*. Not only do we receive in passing a fair idea of the immediate circles in which an assistant overseer on the Ganges Canal lived, we also hear why drunkenness was considered to be "a vice, which, beyond all others, unfits a man for the Department of Public Works". First, the money in the treasury, indispensable for the payment of wages, was no longer safe, which of itself implied a lack of confidence in the *duffadar* and the *barkandazis* of the guard; second, after a time the subcontractors did not know how to continue their work; finally, such conduct as Hawthorne's obviously undermined the always precarious position of the all too small contingent of Englishmen commanding the Indian workforce.

Who were the Indian workers? First there were the earthworkers or *bildars* (occasionally between 400 and 500 are mentioned at 4 rupees per month; and additionally 10 *tindals* at 6 to 7 rupees);[23] then there were masons and other skilled workers; and finally the men who made the

22. NAI, MB, Proceedings, 24 July 1849, 4629–4636; for Volk see *ibid.*, 9 November 1849, 10480.

23. NAI, MB, Proceedings, 5 January 1849, 14616. In the sources *bildar* seems to be used as an occupational term, meaning an unskilled worker or assistant. As far as I can see, there are no indications that one specific caste, in particular that of the *beldars*, is meant; Kerr, *Building the Railways of the Raj*, pp. 110–112.

materials, workmen in the central smiths' and carpenters' shops, and brickmakers. As they were the main strikers, let us see what we know about their work and their backgrounds.

Between 1842 and 1854, during a dozen of the dry seasons which was the only time bricks could be made, in the First Division alone 211 million bricks were made for the building of bridges, aqueducts, locks, and other constructions. An almost incredible number, as Cautley himself realizes, adding to his report "a popular idea of its vastness may be given by stating that if the above number of bricks were laid endwise they would form a line upwards of 40,000 miles in length".[24] How many people were involved in this fabrication? We do not have direct information to enable us to answer the question, so we must work towards it stepwise; this entails perhaps a somewhat lengthy exercise, but it is essential because we cannot proceed to understand and appreciate the strike without detailed knowledge of the actual labour force.

A production of 211 million bricks in 12 years means on average 17.6 million bricks per season. If made by hand – taking on average 190 working days per season and a daily production per moulder of 800 bricks – that would require about 120 moulders working simultaneously.[25] In fact, the numbers would have been different since not all seasons were equally busy, and from 1848 onwards moulding machines were used. Enough data are available for a few years to reconstruct the total number of workers engaged in brickmaking, and to allow a more detailed breakdown of the composition of this workforce (see Table 2).

As this table clearly shows, the variation between the different seasons depends primarily on the number of *bildars* needed for digging the clay and carrying it from the pits to be mixed with water and moulded. The distance between the two places in fact determined the number of *bildars* engaged in the preparatory phases of the brickmaking process.

Unfortunately, in Table 2 a rough estimate is available only for the season 1846/1847 to indicate the ratio between all workers of the First Division engaged in making green bricks and those engaged in the firing process. However, for a limited number of kilns on the Ganges Canal in about the same years enough data are available not only to corroborate these results, but to supply more details about the different tasks involved: loading, firing, and unloading of the kiln, and possibly also the transport from the kiln, or "clamp", to the construction site (see Table 3, p. 60).

24. Cautley, *Report on the Ganges Canal Works*, vol. 3, Appendix A, p. 19.

25. The number of days is taken from *ibid.*, vol. 1, p. 65; daily production per moulder of 800 can be found in NAI, MB, Proceedings, 25 May 1849, 1286 (an estimate by Finn which seems to be more realistic than the 1,000 which one also can find). Cf. Major Baker who, in 1847, planned for brickmaking for the Solani Aqueduct, 149 brick moulders per day plus 3,309 labourers; *ibid.*, p. 66.

Table 2. *Reconstruction of the composition of the labour force engaged in brickmaking at the First Division of the Ganges Canal during the seasons 1846/1847 to 1849/1850*

	1846/1847	1847/1848	1848/1849	1849/1850
Number of *bildars* per moulder:				
– for excavating		incl. below	incl. below	incl. below
– for carrying clay to *pukka* terraces (called *tughars*)		3	3	1
– for breaking clods and rough tempering of the clay		1	incl. above	incl. above
– for mixing and carrying the prepared clay (called *garrah*) to the moulder		3	2.5	2.5
– for carrying ashes and water		1/6	1/6	1/6
Moulder	1	1	1	1
Total number of workers or *bildars* in a moulder's gang	N/A	8 1/6	6 2/3	4 2/3
Total number of moulders	149	150	N/A	200
Total number of workers making green or *kutcha* bricks (also called "bucks")	[1,250]	1,225	[1,000–1,200]	933
Total number of workers loading ("packing"), firing, and unloading kilns and clamps	[2,200]			
Grand total per day	3,458			
Percentage of workers making green bricks	36			

Sources: 1846/1847: Proby T. Cautley, *Report on the Ganges Canal Works: From Their Commencement until the Opening of the Canal in 1854*, 3 vols and one atlas (London, 1860), vol. 1, p. 66; 1847/1848: *ibid.*, vol. 3, pp. 8–9, and National Archives of India, New Delhi, Military Board [hereafter, NAI, MB], Proceedings, 12 September 1849, 9091 (Roorkee); 1848/1849: Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 15, and NAI, MB, Proceedings, 25 May 1849, 1285–1286 (Roorkee and Mahewar, August–October 1848); 1849/1850: Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 16, and NAI, MB, Proceedings, 13 June 1850, 2262 (Roorkee, Mahewar, Dhunowree, and Salempur in May 1850). See also F.D.M. Brown, "Brick-making near Roorkee", in J.G. Medley (ed.), *Professional Papers on Indian Engineering*, First Series, 4 (1867), pp. 158–165, 160, and 165 (four men and two boys per moulder).

Table 3. *Percentage breakdown of costs of moulding 100,000 bricks and firing them in puzawahs, or clamps, Ganges Canal, 1848–1851*

%	1st Division 1848	3rd Division 1850	3rd Division 1851
Pukka bricks at kiln	19	9.2	12.7
Fuel	43	59.1	59.9
Loading or piling	22	19.2	17.1
Firing or burning	4	N/A	N/A
Unloading	11	N/A	N/A
Miscellaneous	N/A	0.9	0.6
Establishment	1	11.6	9.7
Total	100	100	100
Total cost in rupees per 100,000 bricks	772	501	450

Sources: 1st Division (old kiln Roorkee 25 June 1848 – 120,000 bricks): NAI, MB, Proceedings, 12 September 1848, 9089; 3rd Division 1850 (based on data for 32 kilns, costing on average 501 rupees) and 1851 (based on data for 31 kilns, costing on average 450 rupees): "Building Materials", *Papers Prepared for the Use of the Thomason Civil Engineering College, Roorkee*, no. 1 (3rd edn, Roorkee, 1862), pp. 47–48.

Combining the two tables we may suppose that twice as many labourers were involved in the firing process – either in fixed kilns or in clamps (*puzawah*s) – as in moulding.[26] All these data and considerations would lead to the conclusion that for one moulder the following additional labourers are needed: between four and seven for excavating, preparing, and drying the clay, and fifteen for the firing process, which might have included a number especially engaged for all sorts of transport, mainly carting of fuel to the kiln and of bricks from the kilns to the sites where they were needed for masonry and other purposes.[27] The great number of people involved in preparing the *puzawah* (piling, firing, and sorting of the ready bricks according to quality) should not surprise us, for to load such a stack of 100,000 bricks two to three months were needed. A total sum of 80–100 rupees spent would amount to 40 rupees per month, or indeed ten individuals at 4 rupees a month each, which corresponds to the wages found so far.[28]

26. This is confirmed by the data concerning Mynpooree District ("Building Materials", p. 38). For unknown reasons, other dispersed data show much higher costs for green bricks and much lower (up to impossibly low) costs for loading, firing, and unloading (see data for Dinapore in NAI, MB, Proceedings, 12 Septemeber 1848, 9084, and for the Fifth Division of the Ganges Canal in "Building Materials", p. 49).
27. "Building Materials", p. 38 (according to Finn at the Western Jumna Canals, an extra 150 rupees was needed to carry the ready bricks from the kilns to the works, both for larger bricks that cost 450 rupees at the kiln and for smaller ones of 350 rupees).
28. *Ibid*., p. 46.

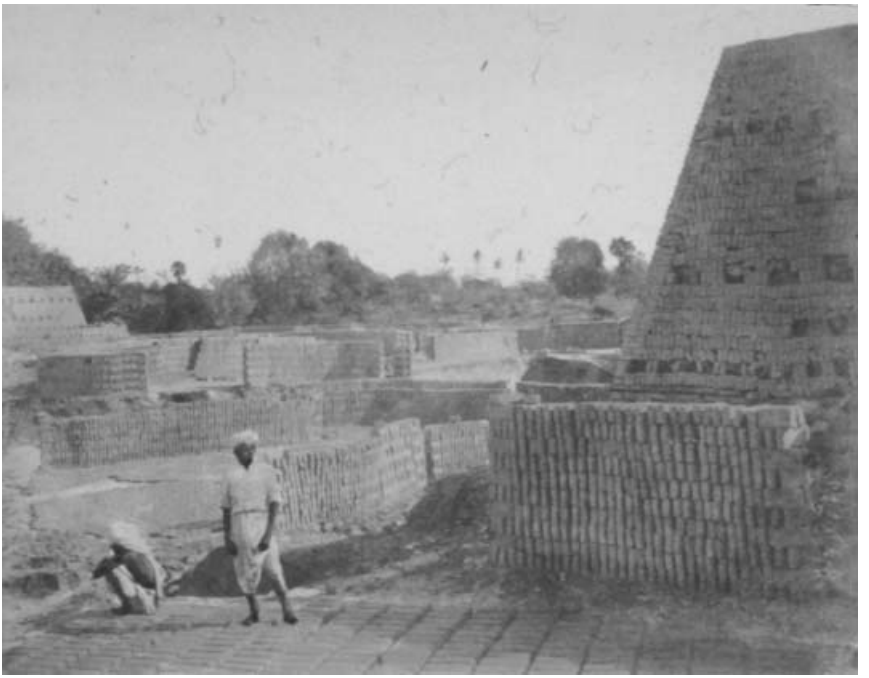

Figure 2. Clamps along the Hooghly river, near Calcutta, ready to be dismantled (right and left), with, in the foreground, stacks of green bricks drying, on which two workers are standing. Hand-coloured photographic print by Frederick Fiebig (c.1851–1852).
British Library, Picture Library, copy neg. B 23209, Photo 247/1(21). Used with permission

Although there are still many uncertainties, that seems to be the best result we can achieve at present. Such an exercise might seem futile, but we shall see that a breakdown of the labour force is important to understand the labour protest properly, as it is always necessary to pinpoint precisely which labourers are involved, in what type of collective action, and which are not. The total workforce on the brick fields of the First Division, an estimated 3,000 men during the season 1848/1849, might be broken down as follows: 150 moulders with 1,000 assistants, and 1,850 in charge of firing the bricks. Among the groups of moulders it is highly likely that women were present as well as men, but there is no positive evidence here to prove it.[29] What was the social background of these brickmakers, and where did they come from?

Kerr draws a distinction between wandering specialists and local labour,

29. Women are not mentioned in any of the sources I have seen so far about Roorkee before the 1860s. From then on they seem to have been quite common, as J.G. Medley writes: "Generally the moulder has one woman to take away the bricks as he makes them"; J.G. Medley, *Roorkee Treatise on Civil Engineering in India*, 2 vols (Roorkee, 1866, 1st edn; 1869, 2nd edn), vol. 1, p. 30 (in second edn p. 33). For female brickmakers earlier on – but in far-away Bengal – see n. 31 of the present article.

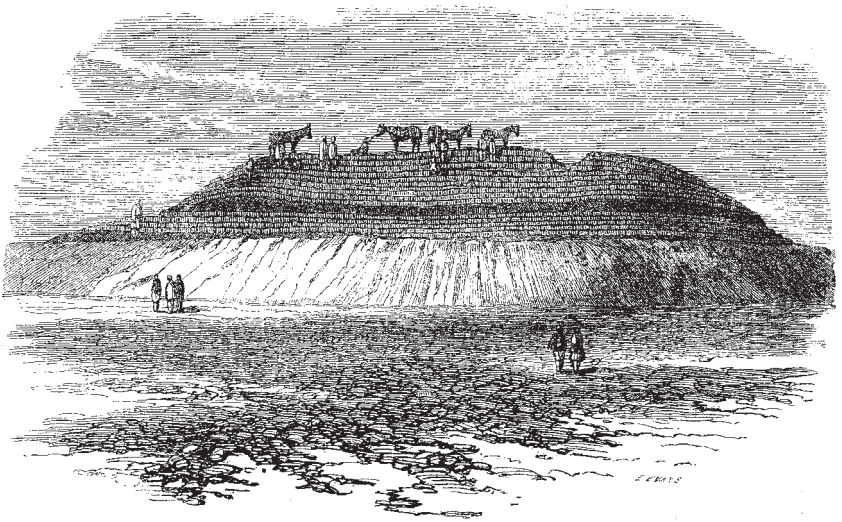

Figure 3. *Puzawah*, or large Indian clamp.
Proby T. Cautley, Report on the Ganges Canal Works: From Their Commencement until the Opening of the Canal in 1854, *3 vols and one atlas (London, 1860), vol. 2, p. 197.*

who could be sent to construction sites "temporarily and involuntarily because village power-holders made them do so" in exchange for only one meal a day; or they could go there at their own initiative to earn some supplementary income. These semi-proletarians after all remained involved in the economy of their villages and the wage rates offered by constructors were not always high enough to induce them to come. Of course, dire need and especially famine might leave them with little option, but many cases are documented where such local semi-proletarians preferred not to apply to public works for employment.[30]

Unfortunately, up to now we have only very scant information on the origin of the brickmakers on the First Division of the Ganges Canal. Although it is known that under certain circumstances specialized potters of the Kumhar caste made bricks on government production sites, in this case that does not seem to have been very likely, at least not local Kumhars. There simply would not have been enough in the small area concerned, and reports of travelling bands of Kumhars are not known.[31] Cautley's report

30. Kerr, *Building the Railways of the Raj,* pp. 170–173; cf. Cautley, *Report on the Ganges Canal Works*, vol. 2, pp. 544–547, 550, 557, 562–563, on the nomadic professional navvies called *oades*.

31. NAI, MB, Proceedings, 3 October 1848, 10835–10856 (report by J.S. Irwin, executive engineer Ramgur Division, Hazareebaugh, 12 July 1848: "It will be seen that the moulding and kilning were to be done by contract by coomars as I believe is usual in department Public Works." In this case the moulding was done by women assisted by men; it was also mostly women who brought bricks to the kilns.).

of 28 February 1849 speaks vaguely of "both Hill men and Labourers from the plains" in the Sixth Division north of Kanpur.[32] In another report (written about the same time on the basis of a report by James Finn of 2 February 1849) about the First Division, he compares contractors at small manufactories in the villages "twenty miles west and ten miles east of Roorkee" and the big contractors in Roorkee proper. The former must be seen as family enterprises with one or two moulders and their assistants, because their seasonal production fluctuated between one and four lakh. They were able to produce bricks at between 42 and 72 rupees per 100,000, because they could select places for production where good clay and plenty of water were available, and decide when to make bricks and when to attend to their household affairs. The brick fields in Roorkee were fixed, and clay and water had to be transported to them. Furthermore, migratory workers always need to be able to work continuously in order to take home enough money for after the season. Therefore they and the contractors who hired them had to be paid much more.

Where did the contractors and their men come from? As we shall see, in September 1848 Finn tried to find moulder contractors in Meerut, Ambala, Karnal, and Dehra Dun, all from 50 to 100 kilometres from Roorkee and apparently places from where they had come in previous seasons. When with the cold weather of 1851/1852 all attempts at firing, or even making, bricks failed and the brick fields were totally cleared out, the parties of masons had to be broken up, and that caused a delay to the works because, Roorkee being remote, the men came from far away, from "Oude, Rajpootana and the country north of the Sutlej". It is not impossible that these were also regions brickmakers came from. Specialists in firing bricks came from the region north of Benares.[33]

Some individual workers assume for us an identity of a sort, because accidents which might befall workers and any compensation the canal works were obliged to pay are discussed in correspondence between the engineers. That is why we know of "Newoz" (also spelt differently), the son of Bhojrey, and thirty-six years and six months old. This "dark black coloured" man was five feet and two inches tall, had "one mark of smallpox on the upper part of the right side of the spine and on the anterior part of either thigh". He was a married Chamar from the village of Gowrah, in the pargana of Mohomdabad (most likely Mahmudabad is

32. NAI, MB, Proceedings 1 May 1849, 101.

33. Cautley, *Report on the Ganges Canal Works*, vol. 1, p. 92 (the northern Punjab is situated north of the Sutlej). For Oude see *ibid*., vol. 3, pp. 4 and 6, where Cautley writes that one of the methods for building brick kilns "was taught us by men obtained from Benares"; and NAI, MB, Proceedings, 12 September 1848, 9095: "Major Baker not three years ago [...] did not think it possible to burn bricks with wood in the upper parts of the Doab, indeed that the practice was unknown north of Benares. I rather think brickmakers were afterwards sent for from that Province".

meant) in the province of Lucknow. A hardworking *bildar*, Newoz had already been engaged for half a year before he was severely injured on 30 June 1848 while digging under the canal embankment. About 11.30 am on that day he was brought to Muhes Chenader Dey (also spelt Mohes Chunder Dey), the assistant surgeon in the hospital in Roorkee. Newoz was found to have broken his right thigh bone in two places as well as his seventh rib, his loins were severely lacerated, and his bladder was totally paralysed. Dey attended him for eight months but then had to declare that the poor man's injuries were so complicated that it "has totally incapacitated him for any business whatsoever". Ten months later J.H. Butler, the Civil Surgeon of the Ganges Canal, could establish no improvement, whereupon Finn was permitted by the military board to grant Newoz a life pension of 2 rupees a month to enable him to return to his home in the Lucknow territory and to support himself there.[34]

A second labourer we know by name is the *bildar* "Nunkoo" (or Nankoo), who died on 25 October 1848 as the result of severe head injuries caused by a fall into the well excavated for a foundation block of the Solani Aqueduct. Nunkoo had been employed for two years at 4 rupees per month. It was decided to grant 50 rupees to Jugmuttra, the thirty-year-old widow he left at home. They were Hindus of the Lodha caste, residing in Ramnuggur village, in the pargana of Rudauli, in the Oude District. The *tindal* Lokey and the *bildar* Matudeer stood as witnesses in support of the claim for a pension for this man's widow, which was to be drawn in Lucknow.[35]

That is all we know about the origins of those workers. On the basis of such scant evidence we may perhaps conclude that the workers in the First Division, including the 600 to 900 brick moulders, the 1,200 to 1,400 brick firers, and the hundreds involved in transport on the brick fields, were drawn from a vast area stretching up to 500 kilometres to the west and north, but especially to the east and southeast of Roorkee.

Brickmakers, like navvies, were recruited through intermediaries, contractors. Although the engineers complained that, unlike in Europe, there were not enough large contractors in India, it is clear that contractors did play a crucial role. James Finn, in charge of the supply of material, remarked:

> I have been very fortunate in my extensive dealings with the contractors for *Puzawah* made bricks, lime and carriage of firewood. Of brick contractors I had

34. NAI, MB, Proceedings, 30 March 1849, 17878–17882; *ibid.*, 18 May 1849, 855–856; *ibid.*, 18 September 1849, 7971–7972. The distance that Newoz had to travel was roughly 275 kilometres as the crow flies if Gowrah is situated in the pargana of Mahmudabad and 450 kilometres if it is part of the pargana of Muhammadabad.

35. NAI, MB, Proceedings, 19 June 1849, 2684–2688. Rudauli is c.350 kilometres from Roorkee as the crow flies. A third incident, involving a *bildar* called Jurowar, is reported (but without further details) in NAI, MB, Proceedings, 9 May 1850, 375–377.

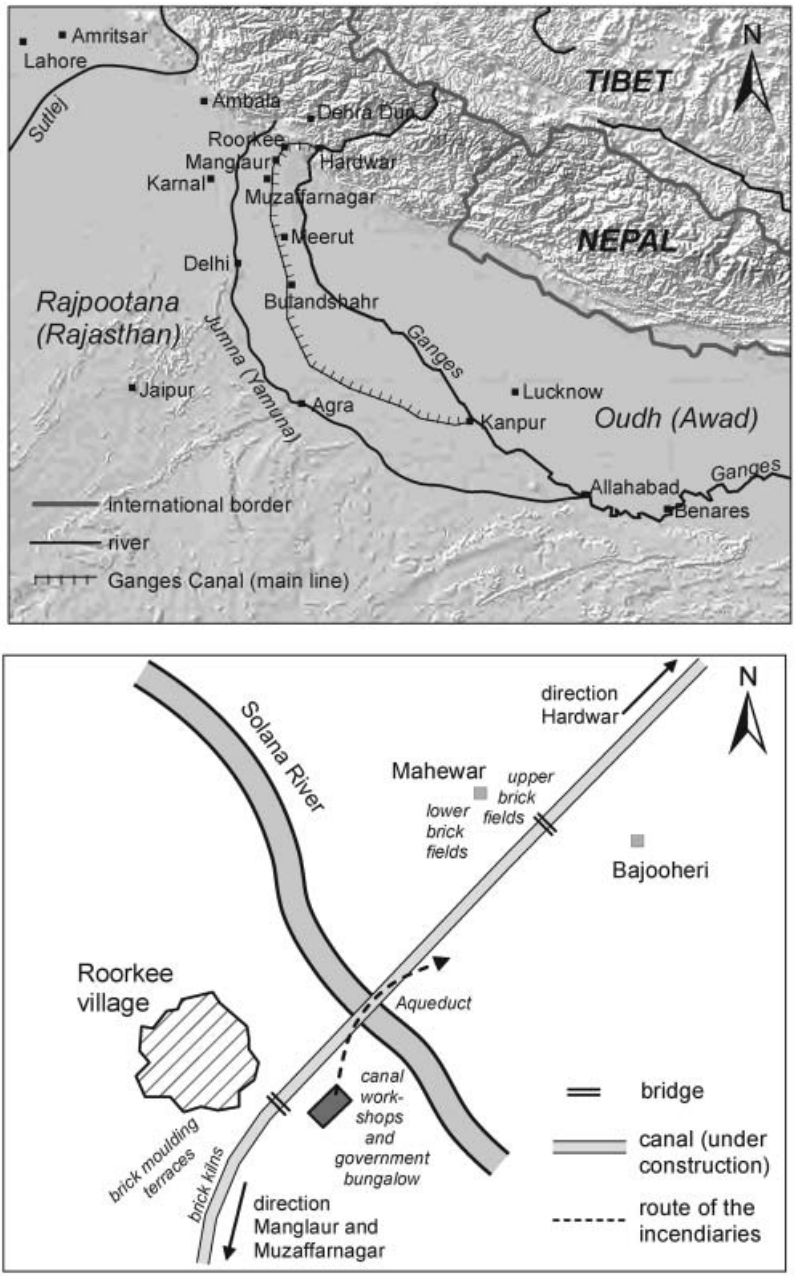

Figure 4. Maps of the Ganges Canal's main line (upper map) and part of the First Division of the canal under construction in 1848–1849 near the village of Roorkee (lower map).
Mapwork by Jelle van Lottum

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> from 40 to 50 in constant employ, about the same number of lime contractors and sometimes as many as 400 contractors with 2,000 carts bringing firewood from the forest.[36]

Finn might have been fortunate with his kiln and clamp contractors, but with moulders – who operated completely separately from the firers – he experienced many difficulties. During 1842–1846 his predecessors had made a loss of 25,225:5:7[37] rupees compared with advances of 79,666:13:1 rupees, and these losses proved to be irrecoverable:

> With one exception, the contractors against whom balances existed, were men of straw; every effort was made to get them to fulfil their engagements, or to refund, but all failed: and it was determined by Major Baker, the director at that time, that legal proceedings instituted against them, could lead to no other result than the addition of a large amount for law expenses to the heavy losses which had already been sustained.[38]

The insignificant losses to Finn of 150 rupees paid to two lime contractors who died before their contracts were completed were also irrecoverable, according to him because "they were in such poor circumstances that they left nothing but their starving families behind them".[39] That last remark seems to indicate that these contractors have to be envisaged rather as cooperative subcontractors than as large entrepreneurs.

Although we have no direct information about the social relations within groups of workers who contracted for moulding during the season 1848/1849, our reconstruction shows that they consisted on average of seven persons headed by the moulder himself, but we do not know if these groups received a collective task wage or just time wages with a 50 per cent premium for the moulder, who received 6 rupees per month against a wage of 4 rupees for his assistants, called *bildars*.[40] There is no further information on this crucial point until twelve years later:

36. Cautley, *Report on the Ganges Canal Works,* vol. 3, p. 21; cf. NAI, MB, Proceedings, 15 August 1848, 7446–7447. As 2,200 workers were engaged in the firing phase (cf. Table 2), this means that on average one brick contractor may have represented fifty workers; however, if the carters have to be included in the total figure, the average is more likely to have been forty workers per kiln (or clamp gang).

37. Prior to 1957, the Indian rupee was divided into sixteen annas, one anna being four pices. Conventionally, a colon is used to separate rupees, annas, and pices.

38. Cautley, *Report on the Ganges Canal Works,* vol. 3, pp. 2–3.

39. *Ibid*., p. 21.

40. Although the sources for 1848–1849 seem to be equivocal about the dominance of time wages, it is still possible that in reality piece wages were paid, which in their reports the engineers, for convenience' sake, converted to time wages as given here. Cf. "Building Materials", p. 45: contract rates for regular moulding with an output of 1,200 to 1,500 bricks per day in the Third Division varied from 55 to 70 rupees per lakh, depending on the difficulty of procuring water. These piece-rates are consistent with the time-rates normally mentioned in the sources.

> At Roorkee a moulder made generally from 800 to 1000 bricks per diem [...]. The number of attendants on each moulder, to supply clay, water, &c. will depend on the distance of the moulding ground from where the clay is dug, and of both of these from the water [...]. On account of the assistance that can be given to the brick-moulder by his family working at intervals, brick-moulding may be advantageously done as piecework, i.e. a certain sum given per thousand bricks moulded and stacked.[41]

However tentatively, some conclusions can be proposed. First, that in Roorkee moulders and firers were organized separately whereas in the villages the small family-based teams of brickmakers seem to have controlled the whole process. Second, that a moulding gang in Roorkee was headed by one moulder, acting probably as *primus inter pares*. Finally, it is not impossible that the firing gangs showed a similar social structure.

THE 1848–1849 STRIKES AND THEIR AFTERMATH

A straightforward account of the strikes of the 1848/1849 season must start with a caution. Even more than in the previous section we have to bear in mind Kerr's caveat: "Although we can only know of these resistances as they come to us, refracted through British eyes and minds, from English-language sources, their presence is clear."[42] Nevertheless, that is all we have. All we can do is try to use these sources as critically as possible.

In order to understand the events of 1848 and 1849 we should go back in time a little, to January 1842 when brickmaking started in Roorkee. Roorkee was then still a small town near the jungle, where suddenly British engineers established their headquarters, turning upside down the local labour market. It was a development not anticipated because, still in 1845, in the words of Cautley, "the price of labour is so cheap and therefore the value of machinery [...] is much less than it is in Europe"; that was soon to change.[43] As Cautley later remarked:

> [...] when works were first established at Roorkhee, and in the forest tracks north of it, the executive Officers were forced to pay high, to get men to come to the works at all: there was an uncertainty about the works being continued, labourers did not understand on what terms they were to work, uncertainty of

41. "Building Materials", p. 25.
42. Kerr, *Building the Railways of the Raj,* p. 169; see also p. 14.
43. Cautley, *Report on the Ganges Canal from Hurdwar*, p. 31, and Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 2. Cf. NAI, MB, Proceedings, 29 June 1849, 3456, where the Military Board comments: "There is no question that when they began, that part of the country was very thinly populated, as the canal progresses, its entire neighbourhood will soon be densely populated, and things will then from competition be very cheap. These are all the good effects of roads and canals."

> getting hire and ignorance of our system of regular payment made it a very difficult matter to get either men or carriage.[44]

However, on assuming the directorship from Major Baker on 11 January 1848, Major Cautley, pressed by the members of the Military Board in Calcutta, thought that it was time to change this situation, which was in his eyes abnormal and no longer warranted. He wanted to turn to wages which he had always paid to similar workers elsewhere ("and that at a time when the Sunday holiday was not allowed by the Government"), wages which were usual on the Eastern Jumna Canals. That meant 3:8 rupees per month for *bildars* instead of the 4 rupees which was usual in Roorkee, a wage reduction of half a rupee, or 12.5 per cent. To put those wages in perspective: poverty in that period was defined as net urban household income of less than 3 rupees per month.[45]

Cautley's argument ran as follows: "The labourer is certain of getting employment and regular pay, and the owner of a cart is certain of getting his cart employed, there is now therefore every reason why we should endeavour to reduce our rates to the proper standard of the country."[46] Besides, Cautley wanted to introduce as many labour-saving devices as possible, for example a new type of kiln (the small Scinde model by Captain Weller of the Engineers) in order to replace the *puzawahs*; or the establishment of a brick manufactory in the centre of Roorkee, and moulding tables instead of the Indian way of moulders squatting to perform their work.[47] On 1 July he could not wait to start the new season along these new lines: "I look sanguinely to the result of next season's operation being much more satisfactory."[48]

But the advantages of all these changes were not as evident to the labourers as they were to the new director. The collective protest that arose went through four phases. First, the refusal and absconding of some contractors and their workmates in September and October; second, two or three work strikes in October; third, several acts of machine breakage between October and March; and fourth, incendiary fires at the end of March, finally followed by conflict with the lime contractors. As soon as

44. Cautley, *Report on the Ganges Canal from Hurdwar*, p. 31; and *idem*, *Report on the Ganges Canal Works*, vol. 3, p. 2.

45. Christopher A. Bayly, *Rulers, Townsmen and Bazaars: North Indian Society in the Age of British Expansion, 1770–1870* (Cambridge, 1983), p. 306.

46. NAI, MB, Proceedings, 25 May 1849, 1266–1267; cf. *ibid.*, 12 September 1849, 9081–9098.

47. These moulders worked on specially prepared terraces, constructed before the start of the campaign in the dry season; bricks were partially "table-made", and Scinde kilns were introduced; see NAI, MB, Proceedings, 12 September 1848, 9095, and *ibid.,* 16 January 1849, 14993–15006. For working while standing instead of squatting, see Kerr, *Building the Railways of the Raj*, p. 174. More details about the working of these new kilns can be found in Cautley, *Report on the Ganges Canal Works*, vol. 3, pp. 9–10.

48. NAI, MB, Proceedings, 12 September 1848, 9087.

Cautley announced the wage reduction – it was on the occasion of Lieutenant Goodwyn's departure from the First Division at the beginning of the brick season 1848/1849 – trouble started. James Finn wrote on 2 February 1849 that it had been very difficult to find moulding contractors:

> [...] in September last Lieutenant Goodwyn had some contractors brought for me from Meerut, and others came from Umballa and Kurnal on my own requisition, but none of them would take a contract for kutcha bricks such as we make here, and exclusive of carriage of earth to the jughars, for less than 100 Rs per lac. I prevailed on one man who came from Deyra Doon [now Dehra Dun], and on another, who resides in the village of Roorkee, to take contracts on trial, at the rate of 75 Rupees per lac, and being anxious to introduce the system of kutcha brickmaking by contract, I assisted these people, by lending them the requisite tools for their work. The bricks made by these parties were invariably counted by one of the European overseers, and the men were paid by me. Yet, after working for about one month and a half, the former party went off without settling accounts, and the latter implored to be allowed to give up their contract, as they declared they could not make anything by it. Whether the Roorkee people did gain by their contract, or not, I do not know, but that the contractor from Deyra Doon did not I am certain, for his party was composed of strangers who seeing our people unemployed on Sundays, would not work for him on those days, and during the remainder of the week, they performed less work for him, than our people did for us.[49]

The reaction of the brick contractors need not astonish us. These men were very well able to manipulate the labour market and were fully a match for the British engineers, as the following example shows from the Third Division under Volk at the beginning of 1849.[50] Cautley reports on a section near Bulandshahr, where the abovementioned Sergeant Hawthorne was stationed:

> At the village of Muhmudpoor or between that and Berkhera, excavation has been commenced on a small scale, but – as usual on the commencement of work – the contractors are holding off in the hopes of higher rates, and on my visit I only saw one small party engaged in digging. [...] Contractors always keep in the background at first, in the hopes of obtaining higher rates, small bodies of this class are put forward as feelers, to report on the state of things in the Division, and the probabilities of their being well or ill used, under or overpaid. We are forced moreover to establish a connection between the Divisions so that rates may be regulated agreeably to circumstances, as it is clear that if one Executive Officer gives a higher rate than another, the one giving the lower rate will find himself deserted.

49. James Finn's report of 2 February 1849 to Cautley is to be found in NAI, MB, Proceedings, 25 May 1849, 1281–1286; earlier on, brick contractors with *puzawahs* were the rule (NAI, MB, Proceedings, 23 June 1848, 3635–3636).
50. NAI, MB, Proceedings, 18 May 1849, 890–892.

In this case E. Garstin, an engineer and a member of the Military Board, commented on the rates that according to him were very high: "We must continue to draw this to Major Cautley's ears, in the hope that by degrees it will be lowered as people flock to the work. We must not forget that in this part of the country there are few or no workpeople."

Finn's only alternative for engaging contractors was to employ all moulders directly and to pay them "task wages", which meant, as far as I can see, time wages at Cautley's new rate but with the obligation of a minimal and explicitly defined performance as to the quantity and quality of bricks moulded: "their work is checked every day by the overseers; when it happens that the workmen do not turn out the given number of bricks, they are invariably fined, in proportion to the shortness of their work". At about the same time new machinery was introduced at the brick fields in Roorkee. First one and then more of Hall's horse- and later bullock-drawn brickmaking machines were imported in October 1848. The machines had to be fed with clay and water, whereupon the properly mixed clay was extruded directly into moulds. Each machine required nineteen men to work it. As the new machines could produce 11,000 bricks in a day, the labour productivity of the moulding gangs could be raised to five times what it had been. Overall growth in productivity was naturally less than that because of the cost of the machinery itself, especially of the four bullocks needed to pull the beam of the pug mill.[51] As it happened, only one machine was operative in the season 1848/1849, which meant that some 7 per cent of total production was mechanical and the rest manual.

Against the expectations of the Military Board and Cautley, direct employment as well as the introduction of the machinery caused brick production to be more rather than less costly. In the words of Finn about the commencement of the working season October 1848 to June 1849, written down a year and a half later:

> [...] the brick moulders were the most intractable and troublesome class of men on our works. We had then about 150 moulders employed daily at Roorkee and at Mahewar, and their combined and frequent efforts to evade the doing of a fair day's work, or to extort from us a higher rate of pay, caused much anxiety to all concerned in the manufacture of bricks. If an attempt was made to coerce a moulder, or even if fault was found with the quality or quantity of work performed by one or more of them, the whole would quit working collectively, take their moulds in their hands, and walk to their huts, in spite of all remonstrance. I can well remember, that they served us in this manner twice in one week at Roorkee.[52]

51. Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 10. According to "Building Materials", p. 27, productivity increased only 40 per cent.
52. NAI, MB, Proceedings, 13 June 1850, 2261–2262; cf. Cautley, *Report on the Ganges Canal Works*, vol. 1, p. 91, and vol. 3, pp. 10–12.

These strikes – phase 2 – seem to have been caused by the direct interference of the European overseers, which was much resented by the skilled moulders, accustomed to producing green bricks with their own gang without any interference, except for counting and quality control of the dried bricks by the engineers afterwards. Under the new system of direct employment with task wages, their attempts to maintain a certain degree of independence were not appreciated by Finn or Cautley.

But that was not all, for besides strikes there was obstruction of the machinery by the moulders – phase 3 . Cautley summarized it as follows in his book: "For the first three months, owing probably to the awkwardness of the men employed, it was constantly getting out of order, and considerable interruption to progress was the consequence."[53] He could easily have omitted his "probably" because, in his own words written ten years before, "One great object in the introduction of machines for the purpose of making bricks was to beat down the monopoly of the brick moulders, in whose hands we were placed most completely."[54] And we need have no doubt that at the arrival of Hall's patent pug mill in Roorkee, Cautley, Finn, and assistant Durrant would have crowed about it to any moulder who might have wanted to complain at its presence. They would have spoken too soon.

On Friday 25 October 1848, the third day after the machine had become operational, the beam of the pug mill broke. On Wednesday 30 October work recommenced, but on Saturday 2 November the cistern of the pug mill failed. In January 1849 the same machine was twice out of order and on 8 February the machine gave up altogether and could not be used again before 21 March.[55] January was a bad month anyhow for all concerned, because of heavy rains. About 6 lakhs of *kutcha* bricks were lost, which is one week's work of all the moulders and their mates. Finn reported on 22 February: "The brick making machine turns out a maximum 8,000 bricks a day, but it is perpetually giving trouble by getting out of order, at this moment it is under repair." It seems that the engineers were convinced that none of these problems occurred by accident, but at the same time the culprits were never caught. One of the consequences was that the engineers needed to have recourse to the surrounding villages again to have their bricks moulded and fired.[56]

53. *Ibid.*, vol. 3, pp. 10–14.
54. NAI, MB, Proceedings, 13 June 1850, 2261.
55. NAI, MB, Proceedings, 25 May 1849, 1265. However, Finn was to write in his quarterly report for November 1848 to January 1849: "Hall's Brick making machine has been, for the last quarter nearly steadily at work, without accidents the daily turn out being about 10,500 bricks. Two of Ainslie's Brick making machines have reached Roorkee, from England."(Proceedings, 23 October 1849, 9435.) Ainslie's machines turned out to be worthless and – even more importantly – some years later Hall's machine was no longer in use in Roorkee and all bricks were made by hand again ("Building Materials", p. 26).
56. NAI, MB, Proceedings, 29 June 1849, 3453.

After all this trouble Cautley commented on 22 February 1849: "Mr Finn has much to fight against, contractors to make kutcha [green] bricks won't stay at Roorkhee", allegedly – according to the contractors – because they "cannot get their labourers to work on a Sunday, when the whole of the monthly paid people, and in fact the whole of the Canal Establishment have a holiday at that day".[57] As the following events will show, that seems to be at best a poor explanation for the refusal of the workers to continue under the new conditions, as are Cautley's statements later in his book about "the most intractable and troublesome class of people that were on the works".[58]

That Cautley was well aware of the difficulties involved in wage reductions is clear too from the following phrase in the same letter of 22 February: "The same reduction [of wage rates] ought to be made in carpenters and masons, but it requires some tact to reduce the pay of these people without interrupting progress." All in all, Cautley was still confident because, according to him, from 21 March obstructive behaviour stopped, as "they saw that we could turn out from the machine 11,000 bricks per day, independently of themselves", and the moulders "became the most docile of our people, and after a while, they were glad to receive 6 rupees per month for a full day's work".[59] That rate is remarkable because it was both before that time and afterwards the normal rate for moulders. Is it possible that, after all, Cautley had had to give in on the point of wages not only to the moulders but to the *bildars* too, and that in the end the wage reductions had to be rescinded?[60]

Whatever the case, in a way the worst was still to come – phase 4. When Lieutenant Goodwyn returned from the Punjab at the end of March, as officiating executive engineer in the Northern Division he was met immediately by the moulders. They complained about the wage reduction and reiterated their complaints on 27 March, not only to Goodwyn, but in the evening to Lieutenant Yule as well, but without success because Goodwyn stuck to the rate of the director. On that same evening of 27 March 1849, a fire broke out. Next day, Goodwyn wrote a detailed report

57. NAI, MB, Proceedings, 25 May 1849, 1265.
58. Cautley, *Report on the Ganges Canal Works*, vol. 1, p. 91, and vol. 3, pp. 10–12.
59. NAI, MB, Proceedings, 25 May 1849, 1267; cf. "Brick-making in India", in J.G. Medley (ed.), *Professional Papers on Indian Engineering*, first series, 2 (1865), pp. 137–144, 138: "As is the case with every innovation on the customs of Orientals, a person would find a good deal of friction at first starting, but the people employed should in six weeks' time give no trouble." Against this racial argument see Sabyasachi Bhattacharya, "Cultural and Social Constraints on Technological Innovation and Economic Development: Some Case Studies", *Indian Economic and Social History Review*, 1 (1965), pp. 240–267.
60. F.D.M. Brown, "Brick-making near Roorkee", in J.G. Medley (ed.), *Professional Papers on Indian Engineering*, first series, 4 (1867), pp. 158–165, 160, also gives 6 rupees per month for moulders at the pug mill and 4–5 rupees for the other labourers, as well as 2–3 rupees for the boys.

to the director, from which it is interesting to quote extensively because of its details:[61]

> I regret much to have to report the occurrence of several fires among the thatched sheds of the public works at Roorkee last night. These fires were evidently incendiary and have caused considerable destruction of Government property. Ajuba Chowdry of Mr. Finn's hackeries states that about 9 or 9.30 on the night of the 27th inst. he ran outside Mr. Finn's bullock shed on an alarm of fire being given by a driver, and saw that the North Western shed for the accommodation of carpenters etc. was burning, the thatched roof being in a blaze. That he immediately busied himself and set drivers to work getting the bullocks out of their shed, and whilst so employed discovered that the range of huts occupied by himself and others as dwellings had been fired. He hastened to the spot and was in time to extinguish the flame. Whilst running he saw a man making off in the gloom, but did not pursue him being anxious to put out the fire in his hut. About an half hour after this Mr. Finn's soorkhie sheds was discovered to be in flames and was consumed almost instantaneously. About half past 10 or 11 o'clock the shed used by the sawyers, situated between the Roorkhi Bridge and Government Bungalow was discovered to be in a blaze, and burned with such rapidity, that little could be done beyond drawing away some timbers, which, lying at a moderate distance from the fire, permitted the approach of bildars for that purpose. About 11.30 o'clock the stacks of thatching grass at the South West end of the aqueduct were in a blaze and the incendiary or incendiaries appeared to have crossed the river to have attempted to burn the line of lime sheds along the aqueduct on the Mahewar side. They succeeded in thrusting fire into the thatched roofs of 4 or 5 sheds but as Mr. Parker had stationed men on the look out to frustrate any attempts of this kind, the fires were seen and extinguished before they could spread or do any material damage. About 12 o'clock an attempt was made to burn the shed near the weighing machine within the coffer-dam and so bold were the incendiaries that this was done within 200 yards of the spot where I was in person directing the efforts which were being made to check the conflagration of thatching grass. The fire having been discovered before it burst out in any strength was extinguished without much difficulty. The fire engine had been brought to bear on the burning ruins of the sawyers shed and when the flames were reduced so that no apprehension was entertained for the safety of the Government and private buildings in the vicinity, the engine was taken down the aqueduct to the grass stacks and played on them during the remainder of the night, neatly checking further ravages of the fire. But failing to extinguish it, about daylight it became practicable to commence unstacking the bundles of grass.

For Goodwyn, there was no doubting the cause of these incendiaries, which cost 1088:14:8 rupees plus 385 rupees for Finn's *soorkie* pounding

61. NAI, MB, Proceedings, 6 July 1849, 3757–3766: Goodwyn's report of 28 March and Cautley's comments of 10 April 1849. I do not know what position Yule (Goodwyn's predecessor) had at the First Division at that time.

sheds and one range of outhouses for artisans (the equivalent of the wage reductions for at least 120 *bildars* for one whole season). He wrote:

> I am inclined to think that the cause which has led to this wanton destruction of property has been discontent of the bildars at the rate of wages which they at present receive. On my first appearance on the works after rejoining my appointment and also yesterday I was saluted with sundry complaints on this point as also was Lieut. Yule in the evening. As of course the complainants could not be listened to and as perhaps they had supposed that the higher rate of pay Cos. Rs. 4 – per mensem instead of Cos. Rs. 3:8 – might be reverted to on my return, it is probable that the nearly general dissatisfaction found vent among the leaders of the malcontents by active participation in this outrage, which the remainder either approved of or would take no active steps to prevent. That such was the case is I believe the opinion of all the officers present. The greatest difficulty was in getting the bildars out to work, and unless the incendiaries had been pretty confident of the sympathie [sic] of perhaps the majority of the bildars, I do not think they would have acted as they did after the alarm was given and everyone was on the alert. I am using every exertion to discover the delinquents and have offered a reward of Co. Rs. 200 to anyone who will give information leading to the conviction of one of them.

The only solution Goodwyn had to offer to the director was to

> [...] post one bildar at each thatched shed on the works during the night for the next month. [...] I propose simply excusing them from day work, the bildars acting as chowkeydars and changing the men constantly so that at the expiration of a month, on the discontinuance of the practice of guarding these sheds, no one can fancy himself aggrieved.

On top of these measures Cautley ordered the removal of every grass hut in the neighbourhood of the workshops.

Cautley, as before, tried to minimize the seriousness of the incident and to disassociate it from his wage-rate reductions. He even omitted the entire episode from his book, which does not fail to mention the strikes and the machine-breaking. In his letter to the Military Board of 10 April 1849 he wrote that, according to a semi-official letter of Goodwyn, "the opinion of Mr Finn and others is that the incendiary was a villager, and that the bildars had nothing to say to it, but that it is useless speculating as to how the fires originated". Cautley himself doubled Goodwyn's premium of 200 rupees. In the light of all the events since the beginning of the 1848/1849 brickmaking season we may, without any hesitation, attach much more credence to Goodwyn's than to Cautley's interpretation of the incendiaries of 27 March 1849.

How all those engaged in the labour conflicts of that steamy season came to terms with what had happened is not clear, but it might possibly be significant that Major Proby Cautley fell seriously ill and had to leave for the hills north of Dehra to recover. As early as December 1848 he was

afflicted with a fever while making his tour of inspection in the neighbourhood of Meerut on his way to continue his duties on 18 January 1849; a further attack felled him in July, this time for several months.[62] Furthermore, on 1 November 1848 he recommended to the Military Board that they raise the salaries of most specialists on the canal, not only the English ones, but most especially the Indians, such as the head artificers. Without such increases for such men as the treasurer, the head masons, carpenters, and smiths, he deemed it impossible to attract the best people to the service.[63] The *bildars* employed at the machine might have found some blessed oblivion at the Haridwar Fair (10–11 April 1849), when they were allowed two days off, of which one was paid.[64]

At the end of the 1848/1849 season James Finn concentrated on a new adversary, the lime contractors. Whereas during the greater part of that season slaked lime had been delivered by the contractors at 30 rupees per 100 maunds, Finn proved able to reduce the rate to 22:12 rupees in the quarter May–July, which amounted to a saving of 7:4 rupees, or nearly one-quarter of the original rate. In his own words:

> This was effected by my having laid in a large stock of the material from which circumstance I was for the time independent of the old contractors. By inviting new people to take contracts, I created an opposition, and thereby though with an indefinite deal of trouble I broke up the old monopoly which had existed since the time I took charge.

Unfortunately we do not know very much about this trouble, but later on Finn lifted a corner of the veil:

> As our work progressed and competition was engendered, I thought an opportunity offered for getting [the lime] at a reduced rate, and to a certain extent I succeeded in the second season of our operations. In the following year, however, I proceeded too far; I paid no more than 23 rs. 12 a. per 100 maunds; the consequence was, that the supply fell off; contractors would not come forward, and I was reduced to the necessity of advancing the rate by 1 rs. 8 a. per 100 maunds. [...] ever since November 1850 the price of lime has remained fixed at 25 rs. 4 a. per 100 maunds, and I believe this to be a fair rate both for contractors and Government.[65]

62. NAI, MB, Proceedings, 28 August 1849, 6496–6500; *ibid.*, 9 November 1849, 10481, and 18 December 1849, 12575.

63. NAI, MB, Proceedings, 2 November 1849, 10093–10101; cf. also *ibid.*, 18 August 1848, 7500–7501.

64. Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 13. Cf. Basu, "Strikes and 'Communal' Riots", pp. 957–958, for the significance of such festivals for workers and for labour relations; and Bayly, *Rulers, Townsmen and Bazaars*, pp. 127, 159, 184, 280 for the Haridwar Fair.

65. NAI, MB, Proceedings, 5 March 1850, 16488; Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 21.

A price reduction of 25 per cent turned out to be impossible for the lime contractors in the long run, but one of 15 per cent was, apparently, feasible.

In sum, at great cost the engineers seem to have won their position against the moulders for the time being. However, was it worth it? Certainly so at first sight, and that is of course stressed by Finn to Cautley and by Cautley to the members of the Military Board who regarded the high material costs "the disease of the Canal Department". The manufacturing costs of the bricks had indeed been greatly reduced in Roorkee, from 1194:9:2 rupees per lakh on 30 April 1848 to 705:2:7 rupees by 31 July 1849, but Finn himself adds: "It is but fair however to attribute this reduction partly to the introduction of a new system of burning in flame kilns and the present regular order of our brick fields."[66]

None of that had anything to do with moulders' wages and labour relations, and more caveats are warranted before we exult prematurely. To begin with, the real quarterly cost of brick manufacturing in the Northern Division had never been under 900 rupees (including carriage), and during the months under scrutiny were in fact 920 rupees per lakh, as Finn later stated.[67] Further, it is questionable to what extent all relevant costs were charged on the materials account, as Table 4 (p. 77) shows.

Finally, even if we could arrive at more realistic overall costs for the moulding process – which undoubtedly were higher than officially reported by Cautley to his superiors – we must put moulding costs in perspective. As Table 2 (p. 59) shows and as Table 5 (p. 78) reveals in more detail, the impact of the cost of the moulding process on the end result of the manufacturing process was much less important than suggested by all the efforts of the engineers to introduce new labour relations.

Taking all this into consideration, it seems reasonable to conclude that first, production costs of green bricks were rather low in comparison with the cost of fuel and the firing process; second, that labour costs dominated the cost of the moulding process, although we should never forget the cost of damage caused by the labour conflicts; third, that the reduction of moulding costs was achieved mainly by reducing the distance between the digging and tempering sites of the clay and the moulding point rather than by reducing wage rates; finally, that the labour conflict was more about principles than about real costs.

The principles involved touched on the question of the greatest autonomy possible for the workers in organizing their tasks among themselves, when set against the power of the engineers to overrule them. Major Cautley best summarized his self-designated task in the commemorative booklet published to mark the completion of the canal in 1854:

66. NAI, MB, Proceedings, 5 March 1850, 16489–16490.
67. Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 23.

Table 4. *Price of bricks as charged by the Materials Department of the Northern Division to the Works Department of the same Division (including carriage and stacking), 1848–1850*

Period	Rs per lakh	Remarks about items probably excluded
Working season 1847/1848:		
February–April 1848	1,210	Rebuilding of nearly all kilns probably excluded
May–July 1848	1,300	Rebuilding of nearly all kilns probably excluded
Working season 1848/1849:		
August–October 1848	1,150	Purchase and transport of Hall's brickmaking machine almost certainly excluded
November 1848 – January 1849	1,070	Repairs to that same machine probably excluded
February–April 1849	970	Construction of Scinde and flame kilns at Mahewar probably excluded
May–July 1849	920	Purchase and transport of two of Ainslie's machines (2,500 rupees for one machine) certainly excluded; damage by incendiaries (a minimum 1,500 rupees) and posting of night watches certainly excluded
Working season 1849/1850:		
August–October 1849	920	
November 1849 – January 1850	900	Repairs to Ainslie's machines probably excluded
February–April 1850	900	

Sources: Cautley, *Report on the Ganges Canal Works*, vol. 3, Appendix A, esp. p. 23; British Library, London, OIOC, India and Bengal letters received 2 February 1849, Narrative of the Proceedings of the Government of the North Western Provinces, Judicial and Revenue Department, Revenue 30 December 1848 for the 3rd quarter of 1848, p. 71 (price of Ainslie's brickmaking machine).

> [T]hose who execute works of Civil Engineering in countries overflowing with every resource that mechanical skill and individual enterprise can supply [should not] overlook those peculiar difficulties which beset the Engineer's path in India *where his resources are chiefly in himself*, and where he must not only be the designer of works but the head mason, the head carpenter, *the head brick and lime burner*, in fact the man of all detail work, or of all general design.[68]

It is perhaps symbolic of this imposed ideal of British rule that in 1850 a clock tower was erected in the centre of Roorkee, "this item being

68. *Idem*, *Ganges Canal*, p. 21 (italics mine).

Table 5. *Costs of making kutcha or green bricks at the Materials Department of the Northern Division of the Ganges Canal (in rupees).*

Working season	Monthly wages		Cost of green bricks				
	Hand moulders	Assistants	Wages of hand moulders and their assistants	Bullocks, establishment and sundries	Total	Total	
			Per 27,000 green bricks			Per 100,000 green bricks	As % of fired bricks
1847/1848	7	4	35:10:8 (91%)	3:4:0 (9%)	38:14:8 (100%)	143:15:9	11.5
1848/1849	6	4/3:8	28:10:8 (89%)	3:8:0 (11%)	32:2:8 (100%)	119	12.2
1849/1850	6	4	20:10:8 (87%)	3:2:6 (13%)	23:13:2 (100%)	88:4:3	11.3
1850/1851	(6)	N/A	N/A	N/A	N/A	96:9:9	12.4
1851/1852	(6)	N/A	N/A	N/A	N/A	93:13:4	11.6
1852/1853	(6)	N/A	N/A	N/A	N/A	90:7:9	9.9

Source: Cautley, *Report on the Ganges Canal Works*, vol. 3, pp. 8–9, 15–18, 23 (partially reconstructed).

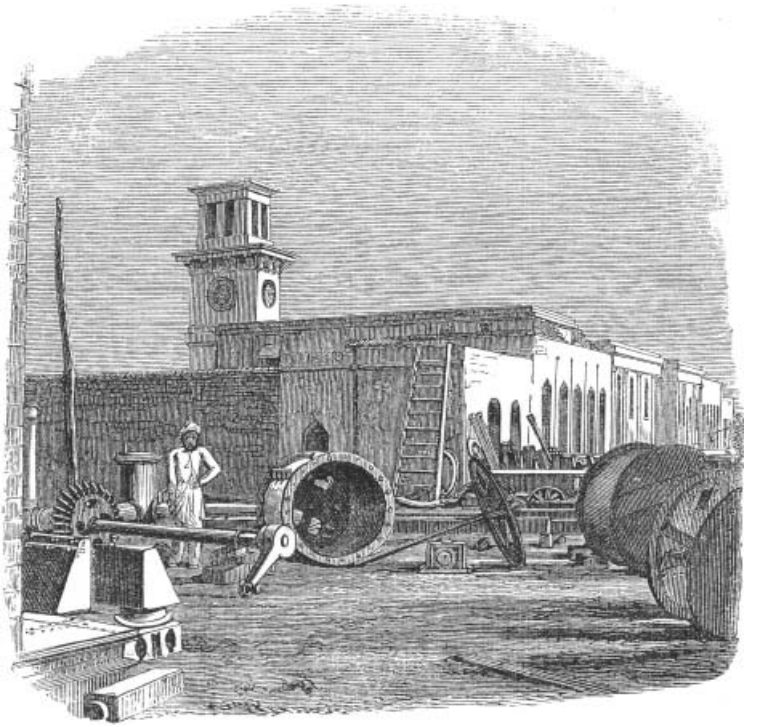

Figure 5. The clock tower erected in the centre of Roorkee in 1850, view from inside the canal workshops. The flagstaff on the top has been omitted by the artist.
Proby T. Cautley, Report on the Ganges Canal Works: From Their Commencement until the Opening of the Canal in 1854, *3 vols and one atlas (London, 1860), vol. 2, p. 381.*

indispensable for securing regularity of attendance. A flag staff on the top of this tower, regulates by the rise and fall of its appended flag, the periods for collecting and dismissing the parties on the works between Roorkee and Mahewar."[69]

After all, in later reports, as we have seen, moulders still earned 6 rupees monthly, sometimes even 7, and *bildars* 4 rupees, or even 5.[70] Moreover, the perpetrators of violence seem never to have been caught, apparently due to the silent approval of the other workers, such as the firers (who were never reported as taking part in the protests), and the carpenters and other craftsmen, who all had wage reductions to fear – as they must have

69. *Idem*, *Estimate of the Probable Expense,* p. 71; cf. *idem*, *Ganges Canal*, p. 13 ("clock and tower and sonorous bell").
70. *Idem*, *Report on the Ganges Canal Works*, vol. 3, p. 121 (data for 1857); "Building Materials", pp. 26–27.

realized all too well. All these facts together make it doubtful whether Cautley really had won his battle.

CONCLUSIONS

All the various collective actions by the brick moulders in Roorkee between September 1848 and March 1849, that is to say during the entire brickmaking season from start to end, must be seen as manifestations of a consistent protest against the reduction of wage rates and the intensification of inspection by the Military Board and its representatives. This long and sustained chain of protests by over a thousand workers does not display the supposedly primitive characteristics of labour protest in India before 1880, which, according to Buchanan and later Sukomal Sen and others, mostly involved short-term work stoppages by none too many labourers, badly organized, and reflecting no class-consciousness.[71]

Of course the material presented here does not allow us to conclude in a straightforward way that the brick moulders in Roorkee had something approaching class-consciousness. On the other hand it certainly does allow us to surmise that they were perfectly aware of what was at stake. As far as the sources permit us to say anything about the consciousness of these men, their dedicated and systematic attempts to change the minds of the engineers to make them reverse the wage reductions do not suggest that they should be relegated to something like "the infantile, blundering and frustrated" peasant rebels in the way characterized by Ranajit Guha.[72] Their consciousness reminds us rather of the men and women engaged in the urban tax, famine, and other revolts of the early nineteenth century, described by Chris Bayly in terms of "guild-type organisations of the artisans and labourers", such as the Muslim weavers of Benares who, in 1813, combined their efforts and used court action in the face of deteriorating economic conditions.[73]

What is the significance of the stories told about the brickmakers' strikes of 1848–1849? Do they represent just a new item to be added to the list of collective labour actions that has been reconstructed from Ian Kerr's

71. Buchanan, *Development of Capitalistic Enterprise,* p. 426; Sen, *Working Class of India*, pp. 70–88.

72. Ranajit Guha, *Elementary Aspects of Peasant Insurgency in Colonial India* (Delhi, 1983), p. 76: "The peasant rebel of colonial India, the infantile, blundering and alas, invariably frustrated, precursor of a democratic revolution in the subcontinent had set out to learn his very first lesson in power, but in this earlier period prior to the emergence of a modern bourgeoisie, an industrial proletariat and advanced ideas of democracy he could do so by translating it backwards into the semi-feudal language of politics to which he was born."

73. Bayly, *Rulers, Townsmen and Bazaars,* p. 313 (quotation); cf. also pp. 295–296, 313–333.

74. Cf. Sjaak van der Velden, "Strikes in Global Labor History: The Dutch Case", *Review*, 26 (2003), pp. 381–405; an early example of Indian strike statistics is to be found in Buchanan, *Development of Capitalistic Enterprise,* p. 428.

work? What if they represent perhaps the first recorded and fully documented strike in Indian labour history? It may be that, in the end, it is indeed only a single building block in a vast collection of strikes that can be analysed statistically, as has been done in other parts of the world.[74] But perhaps it is more. For the moment, the events of 1848–1849 at least meet the requirements which make them important for the development of Indian labour history in the way proposed a few years ago by Dipesh Chakrabarty, when he said:

> [...] one has to look at labour not as labour but as a series of activities embedded in particular histories, in particular practices of embodiment. To my mind it is only when we begin to do these things that Indian labour history will break out of the enduring hold, partly productive and partly unproductive, of European sociological thought on our thinking.[75]

Let us try in the same vein to draw a few more conclusions about the character of this series of labour conflicts.

First, it must be emphasized that the reports on which this narrative is based show a remarkable absence of astonishment, indignation, panic, or disappointment among the British engineers. Their reports are detailed and factual, as the lengthy quotations show. The engineers do not ask for military or other assistance; rather they seem to be confident that they can deal with the matter. That is remarkable because officially, since 1819, labour contracts could be enforced by penal law.[76] However, on the Ganges Canal Works such legal actions seem never to have been seriously considered. Of course Cautley and his executive engineers regretted that losses had to be written off, but neither they, nor their superiors in Calcutta, made much ado about the thousands of rupees lost.[77] On the side of the engineers there was a tradition in dealing with labour unrest which was certainly apparent by 1848, but which was probably much older. If that were the case, would this conclusion hold good too for the labourers at public works in general and for brickmakers there in particular?

Second, if so early a tradition of collective labour protest and action among Indian labourers can feasibly be claimed, how would it have to be characterized? The events of 1848–1849 in Roorkee, if seen as a logical sequence of manifestations of the same labour conflict, cannot be ascribed

75. Dipesh Chakrabarty, *Culture in Working Class History: A Discussion* (Noida, 1998), p. 21.
76. Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 128.
77. Cf. Kerr, *Building the Railways of the Raj*, pp. 180–181, 183, confirms this attitude for 1859 and later. A decade after the strike, Cautley wrote emotionally about the nature of the striking labourers; Cautley, *Report on the Ganges Canal Works*, vol. 3, p. 10.
78. Chandarvarkar, *Imperial Power and Popular Politics*, esp. pp. 147–150. I side with Chandarvarkar in his disagreement here with David Arnold, "Industrial Violence in Colonial India", *Comparative Studies in Society and History*, 22 (1980), pp. 234–255, especially where Arnold asks "How were these rural traditions [of violence] transmitted to modern industry?" (p. 239).

simply to the proneness of Indian workers to spontaneous and violent action. In this regard I completely agree with Chandarvarkar's critique, especially his linking it to discussions about workers' violence in early modern Europe.[78] Kerr's interpretation of the labour unrest at railway building sites as a protest against proletarianization is not convincing – if only because he shows at the same time that large groups of navvies and other labourers at public works had been proletarianized before then.[79] It is the latter group which seems to have been most active in the collective resistance of 1848–1849 at the First Division of the Ganges Canal. Unfortunately, it is much easier to say what is wrong about the interpretation of the collective identity or consciousness of the 1848 strikers than to offer any alternative. However, it seems to me that even those seasonal and therefore possibly part-time labourers understood very well the consequences of changes to their labour conditions and labour relations, understood that collective action was the only appropriate answer, and knew how to apply a whole repertoire of activities in order to defend themselves – to a great extent successfully.

Third, and finally, we come to consider the question of when such workers' collective consciousness first emerged and developed in India, when it increased, slowed down or diminished – at least for these groups of earthworkers, brickmakers, and the like. But it is a question which cannot be answered in the analysis of one strike, although the fact that, first, a detailed study of railway building and, now, an early glimpse at canal building have delivered so many examples of collective labour resistance might imply that more research in this and earlier periods will bring us ever more evidence of workers' consciousness and identity, long before the advent of large factories, and before the building of the railways of the Raj or for that matter canal building; and perhaps even before modern imperialism and colonialism.[80]

That was also realized by J.A.P. Macgregor, one of the members of the Military Board, who wrote in 1830:

> It may not, perhaps, be irrelevant to enquire, under what system were the various public and private works constructed, which are to be found throughout

79. Kerr, *Building the Railways of the Raj*, pp. 90, 171–172. For the professional excavators who for centuries had been engaged in circular labour migration (including "the beldars of Bihar and western Bengal") see Ian J. Kerr, "Free or Unfree? Railway Construction Labour in Nineteenth-Century India", in Tom Brass and Marcel van der Linden (eds), *Free and Unfree Labour: The Debate Continues* (Berne, 1997), pp. 405–426, 414–415.

80. For indications of earlier proletarianization see Bayly, *Rulers, Townsmen and Bazaars*, p. 281; and Shireen Moosvi, "Skilled Labour Migration in Pre-Colonial India, 16th–18th Centuries" (Paper presented to the 19th International Congress of Historical Sciences, Oslo, 6–13 August 2000); cf. also Jan Lucassen, "A Multinational and its Labor Force: the Dutch East India Company, 1595–1795", *International Labour and Working Class History*, 66 (2004), pp. 12–39.

> Hindostan, such as Canals, Roads, Bridges, Tanks, Aqueducts, Temples, Palaces, Mosques, Tombs etc. etc. etc. whether undertaken at the expense of native governments, or of individuals, before the introduction of European skill and capital to India. The answer to this query in all probability would be, that they had been chiefly executed by contractors, under the supervision of Government officials, especially nominated for that purpose. And one need only inspect the masonry of the works above numerated to perceive, that the best description of materials must have been furnished by the contractors of the olden time, since their workmanship may be deemed superior to that of modern builders.[81]

Such an enquiry, especially as to the workers behind these contractors and constructions, is now more welcome than ever before.

81. NAI, MB, Proceedings, 11 May 1830, 327.