The coal mining in India during the colonial period was highly labour intensive industry. Throughout the period of our study the industry was plagued by irregular supply of labour. There had been attempts to get a settled workforce completely dependent on mining for their livelihood. But due to nature of industry (violent cycle of boom and depression), the pathetic working condition and the equally pathetic residential arrangement and the low wages, the industry could never a settled working population totally divorced from agriculture.

Among the earliest mining proprietors, there are some indirect evidences that William Jones tried to have a settled labour force around the vicinity of the mine. For this he took 99 bigha of land on lease from the zamindar to build six large huts.\(^1\) Then we have seen that the zamindary system was most prominent system of recruitment of labour in the early history of coal mining in Raniganj. The earliest comprehensive report on the labour force in coal mining gives evidences of settled mining population in certain mines.\(^2\) A committee appointed in 1917 by the Bihar and Orissa Government to enquire into the housing of labourers in the Bihar coal fields estimated that only 15 per cent of the colliery labourers in the Jharia fields, mostly Santals, were settled in the

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1 H.D.G. Homfray, p. 151.
2 L.E.C., 1896.
sense that they had been provided with land for cultivation and had built their own houses on the collieries. Of the remainder, 75 per cent were found to come for several weeks or months and live in the dhowras, while rest lived in their own villages within a few miles of the mines and trekked to their work daily or when it suited them.³ The residential facility provided by the coal companies were highly inadequate, too crowded, and devoid of any amenities. The space of area of the houses was very small.

In the Jharia field, a detailed survey of 1923 found that the following are the space available to miners in their allotted house.

<table>
<thead>
<tr>
<th>Table-4.1: Space available to miners in their allotted house</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between 900 and 700 cft.</td>
</tr>
<tr>
<td>Between 700 and 600 cft.</td>
</tr>
<tr>
<td>Between 600 and 500 cft.</td>
</tr>
<tr>
<td>Between 500 and 400 cft.</td>
</tr>
<tr>
<td>Under 400 cft.</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

(source: D. Buchanan, p.390.)

This was a clear violation of the instructions of The Jharia Mines Board of Health, as it had laid down minimum floor surface of 33 square feet and stipulated an air space of 333 cft was to be allowed for each adult and half space for each children under 12 and the minimum dimension of the room should be such that a family of 2 adults, 2 children under 12 can be

accommodated in it. The Board standard of 10x10 sq. ft. which was highly inadequate was also disregarded in case of temporary hut built by miners themselves with a floor space of even 70 sq. ft. R.K. Mukerjee specifies that cubic space for an adult should be at least 500 ft. and the cubic space for a family should not be than 2500 ft.  

The same survey of 1923 showed that 7 per cent of the quarters were in ‘ruinous condition’ and unfit for habitation. Worse conditions were found in 1938. In 1938 about 34% of the houses in Bihar coalfields where family budget were collected were found to have leaking houses. Whereas, in the Joint Bokaro and Bhadruchuk coalfields had more than 80% of the houses had leaking roofs.  

The miner and his family would like to have a room separate from that of another family for privacy instead of sharing the same room with others. ‘These dhowrahs had no windows, so that when the doors were shut, as it would be during the cold of the night or the heat of the day, the room would have no fresh air. If one compared the dhowrahs with the bathrooms of the Burrahsahibs, one would certainly choose to live in the bathrooms than in these pigsties’. The housing, as provided, was insufficient and unsuitable. The

4 R.K. Mukerjee, p. 305.  
5 Ibid., p305  
6 Buchanan, p. 390.  
7 B.R.Seth,  
8 Mr. Siba Kali Bose, Indian Colliery Employees’ Association, Jharia.
rooms were, as a rule, overcrowded. The claim of the mine owners that they do not find any difficulty in making the labour utilize what accommodation is provided was not untrue. 9

Table-4.2: Extent of overcrowding in Bihar coal-fields

<table>
<thead>
<tr>
<th>Company</th>
<th>No. of houses</th>
<th>No. of adults per room</th>
<th>No. of children per room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhaga</td>
<td>58</td>
<td>5.6</td>
<td>.7</td>
</tr>
<tr>
<td>Joint Bokaro</td>
<td>38</td>
<td>5.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Jamadoba</td>
<td>140</td>
<td>4.9</td>
<td>1.2</td>
</tr>
<tr>
<td>South Kujma</td>
<td>16</td>
<td>4.3</td>
<td>1.0</td>
</tr>
<tr>
<td>Bharuchak</td>
<td>58</td>
<td>3.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>


During B.L.E.C. survey it was found that there were 29000 dowrahs for about lakh of workers.

The dowrahs provided by the employers in Jharia were generally of several different types such as of country tile roof, Raniganj tile roof, arched roof, plastered flat roof and tin roof dowrahs which accounted for 45%, 11%, 39%, 2.2% and 1.5% respectively. Except arched roof and flat roof houses which are generally pucca masonry work, all these are built up of mud and brick. In Giridih collieries, the workers were given only the building materials, such as bricks, bamboos, mud and tiles and they have to build their own

9 Ibid.
houses. As regards the account nearly 85% of the families were living in one room, 10% in 2 rooms, 3% in 3 rooms and 2% in four room houses.  

Every ordinary worker was given a one room house whether he was alone or had family. The same room was used to serve as store and bed room. 93% of the houses had verandah of 5’x 10’ or 5’ x 12’ which were frequently used as kitchen. Where there is no verandah the workers cook their food in the open, or in front of the door or in the room itself.

At the end of the war the workers’ dwellings were still in a miserable condition. There were no latrines, no bath-rooms, no drains to carry filthy water and no proper arrangement to remove the refuse in the majority of the collieries. There were no proper arrangements for drinking water either. The workers fetched water from wells and river. Taps, wherever available, were not adequate in number and in some cases one tap served as many as 500 persons. The average number of *dhowras* in 1944 in Jharia was 33,736 for 101,457 labourers in that coalfield.

An enquiry made sometime in the mid-1940s into 1,030 miners’ families in Bihar revealed that 440 families or 42 per cent never left the coal fields for visit to the village and 57 families were found to be visiting their family only once in three years or at longer intervals. Thus 48 per cent of the

10 *B.L.E.C*, para 209.
11 Ibid., para 210
12 B.M. Prasad, p. 239
labour force covered by the enquiry might be considered to have permanently settled in the coalfields of Bihar.

The larger part of the life of the mine workers outside work was passed in overcrowded, ill ventilated and bleak 'standardised' housing provided by the employers of the dhowrahs, the makeshift huts constructed by the workers themselves, considered by the 1946 LIC as "mere apologies for homes". The *dhowrahs* having a standing floor space of 10 sq.ft. usually quartered 4 to 7 persons and often even 12 to 15 persons. The Commission reported: "The existing atmosphere and outlook in the mining settlements is so drab and dreary that few human beings would have any inducement to continue for long spells of time in these."

Sanitation was far from satisfactory and left much room for improvement. Surroundings were dirty and unclean with no arrangement for sewage removal drains and if at all they existed, were not cleaned; water-supply was meagre. There were no arrangements for bathing or washing; latrines were practically non-existent; as a result thereof, periodic epidemics were frequent. These *dhowrahs* were visited regularly by cholera, smallpox and plague.¹³ And each year it claimed a large toll from these inhabitants. In 1905, Jharia was severely affected by plague.¹⁴ The insanitary condition of the residential area was proverbial. The houses constructed for the workers were like cells built in continuation and all of them were overcrowded. So once

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¹³ *RCIM*, 1907, p.22.
¹⁴ *Geology and Mineral*, A, No3-4, March, 1910
plague makes an appearance in this filthy habitation it spreads very fast.\textsuperscript{15} Cholera being water-borne disease was endemic in these areas. As the workers were not provided with any system of supply of proper drinking water tanks and wells were the only sources of water supply. When the stagnant water in tank is used for washing cattle, human beings and clothes as well, the level of contamination may not be very difficult to understand. Some individual company in Jamadoba had tried to supply filtered water to its worker but this was an individual effort. In 1908, Jharia experienced severe cholera epidemic which led to great shortage of labour in midst of a coal boom.\textsuperscript{16} Small-pox breaks in a major epidemic form once a year during winter and runs its epidemic form till checked by the advance of the hot weather. This was the condition of the area where the workers lived and this hardly was tempting for any new arrival, as in the adjoining areas it had earned a very bad reputation. Under this condition the Bengal sanitary bill was passed in 1910.\textsuperscript{17} So we can judge that the coal never tried to provide the workers with a decent with any basic amenities.

**Underground mining conditions**

The Indian coal mines enjoyed decidedly favourable natural conditions. In the early days they were exceedingly shallow, the seams were exceptionally

\textsuperscript{15} Ibid. p. 4
\textsuperscript{16} Heslop, Presidential address, *T.M.G.I.*, 1910, p.22.
\textsuperscript{17} *Geology and Mineral*, A, No3-4, March, 1910, p.7.
thick and workable, and during most of the year there was relatively little trouble from excess water. Yet labour in the mines was not regulated until 1901 and conditions were often very bad for the workers. About 1900, Lord Curzon found the conditions in the mines far from satisfactory and out of his investigations resulted the first Indian Mines Act. Lord Curzon says:

I . . . asked Mr. Reader, the Officiating Inspector, for a special report. . . What he told me was that, in his many inspections he had repeatedly found an utter disregard for human life, resulting partly from ignorance, and partly from carelessness, and that many mines were conducted upon such inhuman lines—these were his own words—that some immediate Remedial action ought to be taken. . . . In many of the mines the head gear and winding apparatus were unsafe. Elsewhere there was no attempt at proper ventilation. Frequently the managers were absent, and the work was proceeding under no sort of control... In one case, in a Bengal coal-mine, Mr. Reader found two hundred and fifty people (men, women, children, and infants) at work, where he reported the ventilation as nil, the air as foul in the extreme with smoke and gases, and the conditions as unfit for human existence... In two other gaseous mines, where the managers were absent, and incompetent substitutes had been left in charge, he found huge fires kindled in the working galleries, and naked lights suspended from the roof where the cutting was going on. . . .
Again, he says that infants are allowed to be carried and kept to sleep in foul places incompatible with health or safety.\(^{18}\)

By this time any effort by the government to regulate the working or the living conditions was opposed on the pretext of interference. This *laissez-faire* policy of the government exposed the workers to worst form of exploitation by the management in the working conditions and worst housing around the mining areas. The coalfield earned bad reputation for diseases in the surrounding country.\(^{19}\) Coalmining has always been believed to be a dangerous, dirty, risky and hazardous job. This could easily be shown by the working condition of the mines.

The working condition in mine was highly deplorable. The Kerosene lamps used in many mines gave insufficient light, the stink emanating from Kerosene oil 'kupis' the offensive smell of explosives the coaldust in the air knee deep water in many pits, to hack coal with a heavy pick, and to carry baskets of coal weighing 60 lbs. and over in such an atmosphere leave on him incapable of increasing his output and earning a higher wage with the present rate.\(^{20}\) Even the pits underground were not provided with latrines and urinals and there were no facilities for even drinking water; the miners had to quench their thirst by using the water dripping from the seam. All compounded made

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\(^{19}\) *Geology and Mineral*, A, No. 3-4, March, 1910, p.3.

the underground unbearable for the workers. In 1900, when Lord Curzon visited the mines in Jharia, he was latter to remark upon the “utter disregard for human life” the unspeakable condition of work and the total lack of regulation. “Up to that time” wrote his biographer, “Indian Mines had never been properly inspected, and accidents were not properly reported. The Government...had woven a wonderful web in which to enmesh mining prospectors; they had done nothing for the protection of people who worked in mines already existing.” Of sanitation, they politely but firmly decline to spend any money in their practical application. The Committee formed to look into the sanitary condition of coalfields in Bengal stated: ‘The firms of managing agents in Calcutta are also not altogether blameless in this policy of laissez-faire, in as much as they purposely “turn the blind eye” towards all advice and warning and while professing in the principle of sanitation, politely but firmly decline to spend any money in their practical application.’

The lack of latrines and urinals forced thousands of miners to ease themselves in any secluded place in the pits. Margret Read stated that besides fouling the air, this lack of sanitation causes the soil to be impregnated with hookworm which infects the bare footed miners easily through their feet. This exposure to infection continues all the time they are in the mine, while the

22 L.Fraser, pp.328-29.
23 Geology and Mineral, File no. 16, March, 1910
eating of food underground is an additional source of infection.\textsuperscript{24} Investigations into hookworm were made during the years 1918-1922. The underground water of 79 pits and inclines in 29 collieries was examined for living larvae and 75\% of the cases were found to be infected. The number of persons examined was 5,689 and the percentage of infection was 68.85 in collieries.\textsuperscript{25} According to information supplied to the Royal Commission 90\% of the adult workers in the Jharia mining area were infected. For the improvement of sanitation underground in coalmines the Royal Commission for Labour suggested that bucket latrines should be provided at convenient spots and a small staff of sweeper employed to keep the latrines clean and to remove the content of the bucket to the surface daily for final disposal.\textsuperscript{26} But this proposal was never implemented on the pretext that the native workers are used to ease themselves in open and hence this would not have the desired result.

The other basic requirement of deep mining was the insufficiency of light. As very few mines used electricity for lighting the gallery the only source was naked light. Miners used kupis with kerosene oil or castor oils while working on coalface which gave very insufficient light and also added foul odour. About a quarter of all mines suffered from forms of miner's Nystagmus,

\begin{footnotesize}
\begin{itemize}
  \item \textit{Industrial Labour in India}, Geneva, 1938, p. 190.
  \item \textit{Report of Royal Commission on Labour in India}, 1931, p. 15.
\end{itemize}
\end{footnotesize}
a nervous disease by deficient lighting. The damp atmosphere, continuous exposure to coaldust, highly exertive nature of work all had a telling effect on the health of the workers, with large number of workers suffering from respiratory diseases which are the curse of miners. Miners also faced a high risk of contracting lung diseases.

<table>
<thead>
<tr>
<th>Tuberculosis:</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80</td>
<td>107</td>
<td>181</td>
</tr>
</tbody>
</table>

(source: *Report of the Royal Commission on Labour in India*, vol. IV. Part I, p. 32.)

A survey in the 1950 concluded that 6.6 percent were suffering from tuberculosis and 18.8 percent of the underground workers were suffering from pneumonocosis. So we can at least assume that the conditions would not have been better.

One of the basic features of the Indian mining industris loose technical composition of mining capital. Equipments in many mines remain old fashioned as the owners refused to invest in improving technique. Observers pointed out that cheap labour reduced the effectiveness of machines. This factor coupled with incommensurability of loading and transport facilities with potential output (most underground loading was done by hand, even where there werecutting machines in operation and seasonal shortages of wagon persisted) reduced the economic viability of machines. Not only that the


28 Ibid. p. 64.
mechanisation for increasing the output was slow and halting but even the basic requirement for safety of workers in deep mining was very insufficient.

Walter Ness, Chief Mining Engineer, recommended that as mines were getting deeper, the government should concern itself with the problem of adequate ventilation. Medlicott (Director of G.S.I) wrote a supporting letter on this point: 'In many of the mines I have visited, there are conditions of suffocation. In the smaller mines where modern machinery is not at all used both above and below ground, ventilation becomes unsatisfactory even at a small distance from the shaft.' In about 420 collieries in Bengal, Bihar and Orissa producing about 95 percent of coal, there only 47 mechanical ventilators. The number of mechanical ventilator used in coal mines in 1930 was just 83 which rose to 158 in 1945. Similarly was the case of safety lamps, a basic necessity for deep and gassy mines. In 1930 the number of safety lamps used in coalmining industry was 22,654 for 126.6 thousands of workers working underground; this number rose to 46,268 against the number of underground labourers employed being 152 thousands. These two mechanical devices not only showed very slow mechanisation but also very low degree of

30 Ibid.
33 A. B. Ghosh, p.154
34 Ibid, p.156.
concern for workers' safety. As the mines were being worked to greater depth the ventilation was sure to deteriorate further and the chances of gases erupting enhanced very greatly.

**Mechanization**

The earliest coal mines in India worked by out crop of a seam of coal as in quarries. It was the first stage of almost every mine in the field. The second evolved method was extraction of coal from pits but this method was not resorted to, until the workings became so deep, that it was inconvenient any longer to extract the coal from quarries, or until the water could no longer be kept under by the primitive methods adopted. In most of the smaller collieries, whether worked by pits or by quarries, the water is raised by the "terah" system commonly employed in Bengal for irrigation and for wells. The principle of the common "terah", a long horizontal pole or bamboo, working on the top of two vertical poles, and having a bucket, or an earthen pot, attached to its longer end by a vertical bamboo, while its shorter end bear a stone or a mass of mud as a counterpoise, is hauled down by ropes. Another plan, less used, is to haul up a skin bucket over a pulley. Mat scoops, worked by two men, are occasionally used, especially in steep underground galleries, if the lift does not exceed 2 or 3 feet, such small lifts being repeated at frequent intervals, and the water being, in most cases, ultimately raised to the surface by the "terah".35

35 Blanford, pp. 161-162.
The tools used by the workmen are crowbars, hammers of large size, and wedges. But in Chinakuri picks were used. The pick consisted of a slightly curved bit of iron tipped with steel and was single headed and badly balanced. The handle was round and roughly made of green tough wood. The wedges were shapeless piece of any kind of old iron forged up. The hammers were likewise. The crowbar was one inch round iron -4"-6" long. The coal, instead of being "holed under", or cut away at the bottom, and wedged down from above, is cut out above, and then broken away from below, mainly by crowbars and wedges. This plan was probably introduced by Betts and ordinarily pursued in all mines.

The prevailing method of raising coal was by buckets operated by a gin on the surface and manipulated by from 24 to 48 women. This method was slow, and only a very limited output could be obtained from one pit during working hours. The coal was brought to the pit bottom in baskets by the men or their women, and kept in stacks; each gang appropriating a place to stack coal till their turn came to raise it. This system entailed double work.

The first mechanical plant used in Indian coalmines would appear to have been steam of which records exist showing their existence in 1832. In the greater number of collieries, women are employed to drive a "gin", which is

36 Agabeg, p. 23.
37 Ibid, p. 165.
38 E.C. Agabeg, presidential address, 1914, p. 21.
39 Barraclough, p. 143.
merely a modification for hand labour, of the common “horse gin” or “horse whim” of British collieries and metallic mines. The rope passes round a circular wooden drum of the usual form, to the vertical axis of which, at the lower portion, are attached four arms, each of which is driven or pulled by from six to nine women and girls, of whom, from twenty-six to thirty-six, more frequently the latter number, are employed upon one gin. In 1852 it was recorded that a steam engine of 10 HP was capable of raising 600 blocks in two shafts as compared to 300 blocks raised by 32 women and was hoped that by installing a more powerful engine the women would no longer be required for that work.40 He was reported that one colliery had a small Beam engine that did the combined work of pumping and winding. A pulley from the main shaft of the engine was coupled up by belting to another wheel on the drum shaft. It took three men to run this master-piece. One at the boiler stop valve, one at the engine, and the third man attended the drum and brakes. Ship's windlasses were a common form of engine for winding.41

All borings for proving the field were done by hand, and a boring anything over 250 feet was considered a fine performance. Sinking operations were just as primitive. The explosive used was country powder which gave off volumes of smoke and did very little work for the quantity used. With this poor


41 Frank Agabeg, p.21.
class of explosive sinking operations were slow and dyke driving was tedious. The coal being very shallow, one or two extra pits did not entail much expenditure. It was also cheaper to sink for ventilation than erect elaborate ventilating plant. 42

No lamps were used; the miners' lights consisted of narrow strips of cloth, twisted rope fashioned and saturated in castor oil. It was about 1878 that the tin lamp, now still in use, came into vogue. The oil burnt in them was thin mineral oil from Burma that smoked badly. Kerosine came into use much later.

In 1877 or 1878 for the first time, double-headed steel picks, steel wedges and hammers of the kind still in were used. We adopted the direct-acting pump down below and did away with the expensive system of hand bailing. We were also the first to pay the men by weight and erected weighing-machines in all our new pits.

In 1879 powder was first used by us for blasting down the coal, and the whole output of one mine was obtained solely by this method. Artificial ventilation had to be resorted to, and Frank Agabeg states that he had the pleasure of building the first ventilating furnace, which was in daily use till the pit which was 86 feet deep closed down. 43

By 1874 another method of hewing coal than the prevailing Pillar and Broad system of the time, was introduced and that was the Longwall system

42 Ibid.
and some collieries followed this system. The long wall system worked well, and the daily output from the pit in which it was carried on increased.

In 1906 one of the first colliery power station with a capacity of 400 KVA at 2200 volts, 3 phases A.C. was installed by Bengal Coal Co. at Sodepur. With the advent of electricity in the mines the 1st real step towards mechanization became possible and bar coal cutting machines were introduced between 1906 and 1908. From 1910, the introduction of electric pump with increased efficiency, unlimited range of operation and greater reliability brought about a gradual change in mining methods and allowed the formation of much larger pillars with much smaller percentage of extraction in first working. In 1912 the first aerial ropeway was adopted for the transport of coal to the railway sidings at Saltore Colliery in the Jharia field. The ropeway was 7200 feet long.

The end of the First World War saw a vigorous drive towards a change-over from steam to electricity in the British coalfields; and more and more of steam engines, boilers, even steel chimneys, could be bought at scrap values in England because anything was considered well enough for India. S. McMurtie wrote in 1912: “These older methods are not to be despised; they are used by many who do not like them and would never think of using them with white

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45 E.S. Tarton, Transport and Screening of Coal at Saltore Colliery, TMGI, vol viii, 1913, pp. 50-51.
labor, but who in this country are often hampered not only by the ignorance of the natives but by the fact quick profits are a necessity."  

In 1918 Trehane Rees recommended that the large quantity of unmarketable slack coal which was being allowed to accumulate in and about mines and which was posing a threat of fires due to spontaneous combustion and explosions should be utilised for the generation of cheap electric power at the pitheads. But this proposal was not accepted.

This was followed by other small power stations at individual collieries in the Jharia fields and by 1921, large central power stations were being commissioned in Raniganj and Jharia coal fields to offer bulk energy to collieries. The Mahindra committee gives the latter development just before the independence as shown in the table.


47 Ibid.

48 Ibid, p. 1517.
### Table-4.3: Electric Capacity in the Various Coalfields

<table>
<thead>
<tr>
<th>Name of power station</th>
<th>Existing generating capacity K.W</th>
<th>Extension projected and in hand</th>
<th>Total generating capacity by 1947</th>
<th>Maximum demand K.W (1939)</th>
<th>Maximum demand K.W (1945)</th>
<th>Estimated maximum demand 1948</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A: KARANPURA GROUP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argada</td>
<td>700</td>
<td>-</td>
<td>700</td>
<td>360</td>
<td>210</td>
<td>575</td>
</tr>
<tr>
<td>Bhurkunda</td>
<td>1000</td>
<td>1000</td>
<td>2000</td>
<td>250</td>
<td>370</td>
<td>825</td>
</tr>
<tr>
<td><strong>B: BOKARO GROUP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kargali</td>
<td>3000</td>
<td>1500</td>
<td>4500</td>
<td>1000</td>
<td>1400</td>
<td>2700</td>
</tr>
<tr>
<td>West Bokaro</td>
<td>-</td>
<td>2000</td>
<td>2000</td>
<td>-</td>
<td>1600</td>
<td></td>
</tr>
<tr>
<td><strong>C: GIRIDIH</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Giridih</td>
<td>4650</td>
<td>2500</td>
<td>4650</td>
<td>3260</td>
<td>4000</td>
<td>Fig. not available</td>
</tr>
<tr>
<td><strong>D: JHARIA COALFIELD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sijua Jharia</td>
<td>15000</td>
<td>4000</td>
<td>19000</td>
<td>8800</td>
<td>10300</td>
<td>16000</td>
</tr>
<tr>
<td>E.S.Co. Loyabad</td>
<td>12000</td>
<td>-</td>
<td>16000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jamadoba Pit</td>
<td>7000</td>
<td>4000</td>
<td>11000</td>
<td>2100</td>
<td>4500</td>
<td>6250</td>
</tr>
<tr>
<td>Mohuda Pit</td>
<td>1000</td>
<td>1000</td>
<td>2000</td>
<td>320</td>
<td>560</td>
<td>-</td>
</tr>
<tr>
<td>Other collieries p.s. owned by industrial collieries</td>
<td>15500</td>
<td>-</td>
<td>15500</td>
<td>-</td>
<td>7000</td>
<td>-</td>
</tr>
</tbody>
</table>

(Source: Mahindra Committee Report, p.291.)

The fact that although the first mechanical loader was tried out in Indian mines in the thirties it could never secure a foothold should be proof enough of this contention. The introduction of the mechanical coal-cutter enabled the elimination of the skilled pick miner whose place could be taken by the unskilled loader. The pace of introduction of the coal-cutter was also hastened by the phased withdrawal from coal mines, under a statutory enactment in the thirties, of women labourers who were doing the unskilled work of loading the
coal that their men-folk, the skilled pick miners, had cut. In fact, the introduction of the mechanical coal-cutter to replace the pick miner in ‘development’ and the introduction of the electric drill to replace the so-called CP miner in ‘depillaring’ following the withdrawal of women from mines and the consequent unwillingness of their men-folk to work in the mines just when the Second World War had opened up new avenues of employment for whole families on the surface near their homes. The peasantry from North Bihar and western Uttar Pradesh were lured into working as indentured labour for loading coal in the mines. Now, the most dangerous places in Indian coal mines are the development headings and the depillaring areas, and it is in these places that manual loading had to keep pace with mechanical coal-getting. The consequent crowding of large numbers of green labour in the most dangerous areas in mines was to be reflected in the very high accident rates. In brief, this so-called mechanisation, far from “reducing occupational hazards of labour underground and the number of men face these hazards” as the Commission tries to make out, was to become the most potent means for mass-death.49

Accidents

The Indian coal mines enjoyed decidedly favourable natural conditions. In the early days they were exceedingly shallow, the seams were exceptionally thick and workable, and during most of the year there was relatively little trouble from excess water. The seam in India are rarely less than 10 ft in thickness and the working galleries are comparatively spacious and so miners

49 Ibid.
are generally able to stand upright. The human element in accidents was of
greater importance in the mining than in any other manufacturing industry,
partly because adverse physical condition and partly because of the supervision
of work cannot be so close as in factory. The condition of mine changes
quickly. An inspection of working the area might be found safe, but within
hours due to air circulation there might an accumulation of dangerous gases
also, as mine air carries up and deposits dangerous coal dust continuously. A
mine area may cease to be satisfactory from the dust point of view within a
short period and any one of the factors or both coupled together can lead to
explosion and disaster for the workers and the mines also. The above factors
make coal mining a highly hazardous industry. Accident rates in coal mines all
over the world are 3 to 8 times more than in factories. It was the dangerous
nature of the industry that Mines Department was established as a separate
department under Chief Inspector of Mines with sub-inspectors to enforce
safety and regulation of proper working under Mines Act of 1923. In spite of
dangerous nature of the underground mining work there are other factors
which lead to large number of accidents in mine.

50 Colin Simons, 'Working Conditions, Accident and Protective Legislation in Indian
Coalmining Industry in Pre Independence Period', Bengal Past and Present,
51 A.B.Ghosh, p. 159.
52 Ibid.
53 A.B.Ghosh, p. 192
54 B.R.Seth, p. 282
1. No training of the workers.
2. Piece rate payment of the workers.

In coalfields of India a cultivator is allowed to work on his first day at the coalface. There were only very few mines in Bihar which imparted any sort of training to the new workers. The failure of the colliery owner and manager to provide even the most rudimentary kind of training must have increased the danger of accidents.\(^5\) The safety at working place depends largely to a great extent on the skills and experience of the miners themselves. It is impossible to foresee the endless danger that may arise through ignorance and foolhardiness. The illiteracy and ignorance of the miners made it impossible for them to perceive the danger to which they were exposed by sleeping in the shadow between the railway trucks, or in the vicinity of tram lines, or sheltering in the drums of the winding engine, or entering fenced off areas, mishandling explosives, riding on running tubs, greasing and oiling machinery in motion, returning to working places before all the charges are exploded, crossing the bottom of the shafts instead of the bye-passes where provided, drying gunpowder over the open fire, and lighting the match in prohibited gassy areas.\(^6\)

The nature of payment and nature of control in mines also leads to conditions leading to large number of accidents. As miners were paid

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55 Ibid., p. 287.
56 Ibid.
according to their output, sometimes they were tempted to rob the pillars to gain some easy picking without themselves realizing the extent of dangers they are exposing for few annas. Complementary to this was the nature of working in the coalmines. Before 1940s, a large percentage of coal were cut by the raising contractors, and these raising contractors had whole paraphernalia for working the mine. And where the safety supervisors were also the employees of the raising contractor, the manager whose real function was looking after the safety aspect were left redundant. So safety was the biggest casualty in the case. As the interest of the contractor with the mine was of short time and their agreements were to load certain wagons of coal, they forced the miners and loader to overload their tub and also encourage pillar robbing for quick coal. Secondly, the decision making bodies in Calcutta were more interested in raising than on scientific or sound working of the collieries. Royal Commission for Labour in India expressed concern about the increasing rate of accident in mines; it hoped that “while the steady improvement, in discipline and regularity of work is without doubt tending to greater safety.” They thought that presence of excessive numbers at certain periods also increased the accident rate and hoped that a better level of individual output, with shorter hours, better disciplined working and better health among the

57 Refer to chapter 2.
60 I.L.O., p 203.
workers would lessen the incidence of accident. Increasing depths of mine to extract coal to meet the growing demand for coal and the accompanying trend towards expanding mechanisation made the problem of mines safety very complex with the passage of time.

The accidents in the coalmine can broadly be studied under the following headings:

1. Shaft accident

2. Haulage Accident

3. Fall of roof or sides.

4. Explosion of fire Damp

5. Miscellaneous accidents by water and suffocation by gasses and electric fault.

Accidents in shafts were rare and these include falling from the cage while ascending or descending the pit of the mine, breaking of the rope, etc. The accidents in the haulage section occupied larger proportion of accidents. This takes place while walking on the haulage road for shortcuts, joy ride on descending tubs, sitting or resting near the haulage roads, lack of any buffer if the tubs get detached while ascending the incline, lack of proper inspection of

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61 Ibid.
the haulage wires, tub links and tub drawback. Accidents due to fall of roofs and sides formed the biggest percentage of mining accidents (60% approximately). The accidents under the head could have been minimized by proper training, alertness of the worker and proper timbering of the roof at appropriate time. Accidents from fire damps can be prevented by proper inspection of the working site for any dangerous gases before start of any shift, use of safety lamps, and use of safety guidelines, etc. The accident under the section can be prevented by having an updated plan of the mines, following the proper scientific methods of working and proper training of the workers.

In the earlier period as the mines were not worked to a great depth the accident due to falls (fall of coal from roof, sides, fall of coal from working face), accidents on shafts (rope and chin breaking, while ascending or descending the mine, falling into the shaft from the surface) clubbed together formed a large percentage of accidents. In 1896 these together constituted 25 cases while accidents due to irruption of water were 7. Similarly in 1908 the accidents due to fall in mines were 58 accidents in shaft were 22, and accidents due to irruption of water or falling into water were 2. These can be explained

63 Ibid.
64 Colin Simons, p. 186.
66 Annual Report of Inspector of mines, 1896, p. 88
due to the unsystematic working of the mine, mine not having proper plan map, and having unskilled labour force.

While in the latter phase, we see the accidents due to firedamp with the deepening of the mine taking a heavy toll of life and property in mine and also cases of land subsiding making their impact felt in the accident chart due to deep working of the mines and due to lack of sand stowing before second working. Some of the biggest accidents in the history of colonial India, like Poidih colliery in 1936, in which 209 people were killed fall under this head.  

As the data for the causes of different types of accidents are not available, independently we have to depend on Royal Commission of Labour.

Here we can see that the largest numbers of accidents were classified under misadventure. And other large percentages were under fault of the deceased. Over half the numbers of fatalities in all years were ascribed to misadventure, yet as the Commissioner for Workmen’s Compensation pointed out to the Royal Commission in 1929, this designation was never defined by law. The Commissioner felt that as the term stood, and ‘if it is pushed to its logical conclusion’, the meaning of misadventure should be that ‘it is a state of things or grouping of circumstances for which the employer was directly or

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68 Report of the Coal Mining Committee, 1937, p27
ultimately responsible’. If this definition had been accepted by the courts then it should have been included in the fourth of our categories and many widows and dependents would not have forfeited compensation. The second and third categories are also somewhat misleading because it would not have been very difficult for employers to prove that in at least some cases miners were responsible for ‘serious and willful’ misconduct (in order for them to avoid paying compensation). As the Commissioner put it, Managements are not unknown, who are themselves responsible, for breaches of the rules and regulations or who acquiesce in breaches of rules and regulations by labour and who do not mind denying liability in case an accident does occur. It is easy in such circumstances for the management to prove that the workman disobeyed some rule or some order verbally given to him.

The attempt of the management to divert the cause of accidents to individual person was because if the mine owners or managers were found guilty of breaking any of the mining regulations, they were liable under Indian Mining Act 1901 to face criminal charges. Although there was a steady increase in the number of prosecutions over the period, the penalties were hardly severe enough to deter the hardened offenders.

70 Ibid.
71 Ibid.
There is a close correlation between the number of accidents and the level of economic activity. The number of fatalities doubled, for example during 1907-08, the year of the spectacular boom. Similarly, during the period of prosperity at the end of the First World War, there was a sharp increase in the fatality rate. The depression of 1931-34 was responsible for the lower accident count, but from 1935 till the outbreak of the Second World War, the unhappy implications of 'slaughter mining' were all too apparent. According to Annual Report of the Chief Inspector of Mines, number of accidents in 1934 was 131 which accounted for 157 casualties (in Jharia, 61 deaths). This increased to 158 accidents with even greater figures of 264 deaths out of which 106 deaths occurred in Jharia and 67 in Giridih.\(^2\) Similarly, during the period of second war we see the increase in number of fatal accidents. Number of fatal accidents in 1941 was 260 as compared to 287 in 1942 and the number of persons killed was 333 in 1942 which was 39 than the preceding year.\(^3\) The casualty for 1943 was 328\(^4\) which shows decline in number but it must be remembered that 1943 was period of labour shortage.

At the time of the appointment of the Burrows Committee (1936), over fifty fires were raging in the underground workings of the Jharia coalfield largely as a result of the premature depillaring that had been taken place there.

\(^2\) Ibid. pp. 32-33.
\(^3\) *A.R.C.I.M, 1943, pp. 9-10.
\(^4\) *A.R.C.I.M, 1943, p.10.
M.S.A. Hydari, Labour Secretary, while moving Coal Mines Safety (stowing) Bill, on 14 April 1939. In 1936 there were 47 fires in 20 different collieries which increased to 74 fires in 56 mines. A fire broke out at Khas Jharia in 1931 after a collapse of an old working. This fire spread to the adjoining mines of Khas Jharia, Sonalibad, and New Khas Jharia and presently burning vigorously near the Dhanbad-Jharia East India Railway, and Surat and branch line.\(^75\)

The loose wording of the Act provided the employers with many loops through which they could avoid liability. Perhaps the most notable example of this occurred in the Mudidih case of April 1928. As a result a heavy subsidence at the Mudidih colliery, several *dhowrahs* (colliery dwellings) collapsed on the surface, and six people were killed outrightly; further forty were injured. The widow of one of the miners applied for compensation. The owners decided to contest the claim on grounds that the accident did not strictly occur ‘in the course of the deceased’s employment’ since the miner was off duty at the time (he was actually asleep). The case was eventually decided against the widow on two counts; firstly, ‘it appears clear that the time spent asleep is not included in such periods’, i.e., in the course of employment, and secondly, because ‘colliery labourers are not in any way compelled to make use of *dhowrahs* which may be supplied by the colliery—they are free to use them or

\(^75\) *Labour Movement in India, 1937-1939*, p. 977.
not as they like'. An Act which tolerated this sort of evasion was not much short of being a mockery, especially in an industry as dangerous as coal mining.

76 Colin Simons, p. 190.