Chapter IV

COAL
In a region like Assam where railways were unknown and roads worth the name hardly existed, communication was mainly carried out by water as there were innumerable rivers and streams. The Brahmaputra formed the main channel of communication between the province and the rest of India. One of the most important steps towards opening out the province, therefore, lay in the improvement of the existing means of navigating that river. Amongst other impediments in the way of economical steam navigation, one was the necessity of carrying Bengal coal upstream, not only for the entire upward voyage but for the return journey as well. A thousand miles of river carriage, in addition to railway charges from Raniganj to Calcutta, raised the cost of fuel at the head of navigation to more than ten times its value at the mines.1 Needless to say, a local source of supply would have considerably reduced the cost of navigating the Brahmaputra. In the given situation, the advantage of a steady supply of coal on the upper part of the Valley had long been admitted. Gradually this had become an urgent necessity because even the small supply, which was sometimes procurable at Dihingmukh, was undependable.

DISCOVERY OF COAL

The first recorded notice of the existence of coal in Upper Assam is by Lieutenant Wilcox, the revenue surveyor posted at Sadiya, who in April 1825, accompanied

a party of the 46th Regiment up the Disang River to Borhat. He remarked that the hills in the neighbourhood consisted of grey and yellow sandstone and that coal, too, was found nearby.\footnote{ibid, p 3.} He, however, gave no details as to its mode of occurrence or of the exact locality in which it was noticed. In a subsequent expedition up the Dihing River, Wilcox observed a seam of coal in the bed of the Buridihing at Supkong. Far to the east, he again observed "a thin strata of coal alternating with blue clay in the sandstone rock" on the North of the Dihing near Tumang Tikrang, a village South-South-West from the snow peaks of Dapha Bum.\footnote{Asiatic Research, Vol. XVII, PP 322, 415, 420.}

This information of Wilcox inspired the policy of David Scott, the great humanist-paternalist, who as the Agent of Governor General, North-East Frontier, had designed a number of schemes for the socio-economic development of the people of Assam even before the Ahom state had been formally annexed by the British.\footnote{N.K. Barooah David Scott in North East India, pp 103-106.} Scott was encouraged by the prospect of having coal locally, which, in his opinion, would make the introduction of steam navigation in the Brahmaputra easier. Therefore, his enquiries about coal and steam navigation had begun at the same time. In July 1825, he urged upon the Government for the introduction of a steam boat in the Brahmaputra.\footnote{This was followed in December 1826, by a letter to Wilcox to ascertain the truth of the rumour that coal was procurable in Upper Assam without much digging and also to}
find out at what expense that coal could be made available for the use of steam vessels on the Brahmaputra. In February 1826, Scott received a letter from one Lieutenant Jones, who replied on behalf of Wilcox. It stated that not far from the village of Teeropong, near the Naga territory, there was a hill stream called Suffrie. It was in that stream that he had discovered floating coal. Scott was also informed that there were at that time about thirty persons, with Wilcox and Jones, who were working in an iron mine at Teeropong, and that, if the Agent so desired, these workers could be used in digging the coal mines. As asked by the Government of Bengal, Scott sent some specimens of the Assam coal to Calcutta in June 1827. The reaction of the Government was not immediately known. However, in October 1827, Scott wrote to George Swinton, Secretary to the Government of Bengal, that an expedition led by Wilcox under his instructions had resulted in the discovery of a coal mine twenty miles east of Rungpur in Upper Assam. He also informed the Government that the River Suffrie, on whose banks the coal mine was situated, might be rendered navigable for canoes of 60 or 70 maunds at a small expense. In the meantime Scott had heard about the discovery of coal beds on the Someswarl River in the villages of Sijuk and Ruok in the Garo Hills. While informing the Government about this in February 1828, Scott observed that coal for the use of steam vessels on the lower part of the Brahmaputra might


6 B.S.P.C., 26 Oct.1827, Jones to Scott dt. 17 Feb. 1826.

7 ibid., 24 Aug. 1827, No.13, Scott to Swinton, dt. 29 June 1827.

8 B.S.P.C., 26 Oct. 1827, No.20, Scott to Swinton dt. 4 Oct.1827.
be available at a much cheaper rate than the coal from the mines of Upper Assam. Nevertheless, Scott concentrated his efforts on Upper Assam. He asked Swinton to give him the detailed information as to "the quantity of coal that the proposed vessel would consume daily; the quantity she could carry and her velocity in still waters; and whether in the lower part of the river where coal would necessarily prove expensive, wood might not be substituted as fuel." As desired by Swinton, Captain Johnstone of the "Enterprise Steam Vessel" examined the steam vessel "Berhampooter" detailed for the Assam Voyage and informed the Secretary that "the vessel would consume 6 to 7 maunds of Burdwan coal per hour, that her coal boxes would contain coal for 70 to 80 hours' consumption, her speed in still waters would be upto 11 miles per hour, and that it would be necessary to have depots of coal every 150 miles."

Accordingly, in April 1828 Scott gave detailed information about the transportation cost of coal to different places. As per his estimate, the cost per hundred maunds of coal would be Rs.12 to the depots on the Suffrie River, Rs.15 to Dikhowmukh, Rs.25 to Gauhati, Rs.30 to Goalpara, Rs.33 to Dhubri, Rs.35 to Bagmara and Rs.38 to Jamalpur. He also mentioned that if the quantity required was more than ten thousand maunds, the cost at

9 ibid, 29 Feb. 1828, No 12, Scott to Swinton dt 14 Feb. 1828.


11 ibid, 7 Mar. 1828, No 37, Swinton to Scott dt 7 Mar. 1828.
every depot would be less than the estimated cost. Every depot would be less than the estimated cost. In fact Scott was convinced that the Government would have no objection in introducing steam navigation in the Brahmaputra because coal was found in abundance in Assam. He even recommended the candidature of C.A. Bruce, formerly in the Flotilla service and then employed in the opening up of the coal mine, for employment in the 'Berhampooter' steam vessel.

Nonetheless, one of the earliest extractions of coal was that in the Valley of the Saffrai, a tributary of the Disang, and as early as 1828 a considerable quantity had actually been mined by C.A. Bruce, who had been sent there for the purpose by David Scott. Bruce, with a party of hundred men, ascended the river in canoes during the rains and commenced operations on a seam which he describes as being 36 feet thick with a thin parting of shale. Five thousand maunds were quarried there and a large quantity loaded into canoes. But the difficulties of navigation were so great, owing to the swiftness of the current, the rapids and sharp turnings, that four canoes were lost in the downstream. The remainder of the coal was brought safely to the Brahmaputra and a boat load despatched to Calcutta for trial where it was pronounced to be equal to English coal and "the best ever found in India." Downstream of the above-mentioned bed, Bruce observed no less than eight other outcrops. The coal in

12 ibid, 18 Apr. 1828, No.101, Scott to Sterling dt 1 April 1828.
13 ibid.
16 ibid.
one of these was said to be 18 ft and in another 37 ft. 6 inches. Some coal was quarried in both of these, but being surface material that had been injured by weathering, it was found to be inferior to that quarried from the 36 ft. seam.17

The authorities were by now convinced that coal was available in abundance in Assam. This enabled Scott to insist on the introduction of steam navigation. His dream almost came true in May 1831, when the Government decided to send one steamer to Assam on a trial run.18 Unfortunately, it was not fulfilled during his lifetime. Scott died in August 1831, and his successors were more involved in revenue reorganisation and the challenge of the predatory tribes on the border. Moreover, the steamship had no immediate relevance as the commerce was still not considerable.19 The situation changed only after the tea factories had started production and problems of transporting this important item of export arose. It was only in 1841 that steam navigation was introduced in the Brahmaputra by the Assam Company for the export of tea.20 Nevertheless, the search for prospective coal fields continued.

The existence of coal in the Nambua, a stream which joins the Dhansiri a short distance South of Golaghat, was pointed out in 1837 by Brodie who picked up a few pieces of good quality coal.21 In 1837 Lieutenant Bigge and Dr.

18 B.P.C. 6 May 1831, No.22 Swinton to Scott, dated 6 May 1831.
20 H.A. Antrobus, History of the Assam Company, p 360.
Griffiths, while exploring the banks of the Namrup river about nine miles South East from its junction with the Burudihing in the Singpho territory, discovered a most valuable seam of coal in the bank of the river:\textsuperscript{22}

\begin{quote}
the upper seam was about 3 feet in depth, the centre one 9 feet, and a lower one of 3 feet...... We loaded a small boat with this coal and sent it down to our camp for trial, when it was found to be an extremely good coal, burning with a strong flame and heat, and very lasting, but from the smell, containing a great quantity of sulphurous matter. It does not burn entirely away, but makes a large portion of cinder, and is, I should say, a valuable description of coal.
\end{quote}

In the same year Captain Hannay appears to have examined the Jaipur coal. In 1838, he reported having found several outcrops. He then set about clearing a large seam, one and half miles South-East of Jaipur. Of the 1054 maunds quarried by him, 224 maunds were sent to Calcutta for trial. The quality of the coal was reported rather unfavourably upon, as being inferior to that previously sent by Bruce from the Saffral and as containing a considerable quantity of sulphur.\textsuperscript{23}

While Captain Hannay's excavation was in progress, more definite information was gained by Captain Jenkins, Commissioner of Assam and Agent to the Governor General in the North-East Frontier, regarding the coal in Disang, the


\textsuperscript{23} \textit{ibid}, Vol VII, p 954.
existence of which had been previously indicated by Wilcox. The first seam met with was in the channel of the river, about a mile North of Borhat, and is described as being 8 ft thick. Another seam was found a short distance away. The coal in both these beds appeared to be of very good quality. The location was suitable for mining as well as transportation of the coal.\textsuperscript{24}

In the beginning, the authorities at Calcutta gave little or no encouragement to the exploitation of the coal resources in the North-Eastern Frontier. The meagre demand for this mineral, shortage of labour, transportation difficulties and the insecure political conditions of the frontier, dissuaded private as well as state enterprise from undertaking coal operations. Since the foundation of the Assam Company in 1838 and the consequent growth of the tea industry in Assam, the demand for coal became considerable. Hence, there arose an urgent necessity for the supply of local coal at reduced rates.

Captain Hannay's operations suffered a set-back when he was transferred to Sadiya. Thereafter, Sanders, special Sub-Assistant Commissioner, took charge of the coal operations. But as he possessed "neither the energy nor the technical know-how" of coal production, the project proved a failure.\textsuperscript{25} Attempts were, nevertheless,


\textsuperscript{25} \textit{ibid.}
made by the Assam Company to quarry the coal reserves of Jaipur since 1840 to meet their own demands.

The repeated failures of Sanders, first at Jaipur and then at Dikhow field, convinced Jenkins of the necessity of appointing an expert with sound knowledge of coal mining to undertake the operations on a scientific basis. Jenkins thus wrote to the Governor in Council:26

Until these several beds are examined by a competent authority we may be losing time and spending money to great disadvantage.

Although, the Government appreciated his suggestion, no attempt was immediately made to implement the scheme.27

A Coal Committee was, however, appointed in 1838 to report on the coal beds of Assam. The Committee pointed out the advantageous position of both the Borhat and Jaipur Coal seams with respect to water carriage. The committee was also of the opinion that in the existing State of communication between Upper Assam and other parts of India, its coal could not be supplied in Calcutta at a cheaper rate than the coal from Bengal. They, nevertheless, considered that the Assam coal might be used advantageously towards supplying the Ganges steamers. They furnished estimates to show that it could be delivered at stations upstream on the Ganges at lower

26 ibid., p 70.
rates than that of Burdwan coal.  

In 1839 Lieutenant Brodie recorded a fresh discovery of the mineral in the Dilsang River Valley. The specimens forwarded proved to be of good quality. It appears that the Assam Company, which already had a quarry at Jaipur, decided to set up a quarry at this location. A further trial was subsequently made by the Company to work on a seam discovered by A.H. Landers in 1842 near the village of Namsang. The coal was tried on their steamer and the commander pronounced it "the best he ever had on board a steamer, generating steam quicker without clinker, and far superior to any coal in Calcutta."  

In the latter part of 1847, Major Hannay had two quarries opened at Jaipur and was of the opinion that "a supply of coal fully equal to the requirements of the Government could be obtained from these if boats were forthcoming for its carriage." With the introduction of the Government steamer service in the Brahmaputra since 1847, the demand for coal increased. As most of the coal fields were situated near the upper terminal point of steam navigation at Dibrugarh on the Brahmaputra, it was recognised that the working of coal beds would usher in "a revolution in the carrying trade on that river." In spite of this, the Government did not take the initiative

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28 ibid., p 7.
32 B.C. Allen, District Gazetteer of Assam, 1905 (Lakhimpur), pp 186-93.
and depended solely on the private contractors who agreed to supply coal to the Government steamers either at Gauhati or Dilkhowmukh. It is on record that even Maniram Dewan acted as a Government contractor for supplying coal to the steamers plying on the Brahmaputra. 33

Jenkins, on his own initiative continued to take interest in the matter and, under his direction, Thornton, Sub-Assistant Commissioner of Sibsagar, accompanied by Mornay, Superintendent of the Assam Company, made a thorough inspection of the coal beds of the River Dikhow which had been partially worked earlier by the late Sanders. The purpose of this inspection was to report on the practicability of supplying coal from there to the Government steamers. 34 The Coal bed which Thornton and the party found in operation by contractors was situated on the side of the Namsesso Valley. The thickness of the coal was about 10 feet of which the pure coal bed was between 3 and 4 feet. Mornay, who had worked in the Bengal collieries for some time, was of the opinion that the Namsang coal was of a very superior quality. However, owing to the problems of transportation, he admitted that the difficulty of supplying coal from Namsang was "great" but not "unsurmountable". He believed that the coal could be transported by water to Gauhati. 35 In fact a native person who accompanied him to the quarry was willing to contract for the supply of coal at Gauhati for 8 annas a maund. 36

Between 1848 and 1865 no important discoveries were

34 ibid.
35 ibid.
36 ibid.
made. However, small quantities of coal were mined in this period at Jaipur and Makum. Although the Coal Committee had discussed the question of opening out the coal fields of Upper Assam, no systematic geological and economic investigation for coal was undertaken. Whatever progress was made in this regard was totally under private initiative. In order to meet the requirements of its tea factories, the Assam Company had been working the coal mines near Jaipur since 1840. Another company, M/s William Malcolm and Browne Wood was floated to take up coal production. In 1850 this company, through its attorney, Browne Wood, entered into an agreement with the Chiefs of the Namsang and kongan Duars for the liberty of cutting timber and working coal within their lands on payment of Rs.60/- annually to each clan. In 1854 the Assam Company purchased the above mentioned rights from M/s Malcolm and Browne Wood. In the same year, the company also asserted its right of possession and working of the mines situated in the gorge of the River Dikhow. But Holroyd, the immediate successor of Brodie, refused to recognise any such right and asserted the claim of the Government to the coal beds in question saying that "No tenure can be held valid except that emanates from the Government of the country." Forwarding the case to the Government the commissioner observed that it was a question for the Government to decide how far it would be wise to allow any person, native or European, to enter into such dealings with the Naga tribes. "Any such

37 B.J.P., July 26, 1855, No.56.
38 ibid.
permission", he added, "might be attended with much mischief as likely to embroil the Government with the Nagas." The lieutenant Governor of Bengal did not agree with this view. He was convinced that:

If persons enter into agreements with the Naga tribes and mix with them in their own hills, conduct themselves discreetly and warily, and observe at all times a conciliatory and liberal course of conduct towards whose labour they employ, not very great risk is actually incurred.

Therefore, the company continued to quarry coal from these mines with the informal consent of the Government.

In the meanwhile, several influential capitalists in England, anxious to undertake the working of the coal mines in Assam, applied for a lease of the Tirap mines. The application was turned down because the Government felt that "to lease the existing mines to any single firm or individual before the Government is in a position to throw open other mines or coal tracts to competition would be to give the lessee a practical monopoly and to place the market at his command." 42

In 1865, Medlicott, of the Geological survey of India, was deputed to visit the coal fields of Assam. After due examination and deliberations, he pointed out the advantages of Jaipur with regard to its position but strongly felt that this advantage was outweighed by the

40 B.J.P., July 1855, No.60.
41 ibid
42 A.S.R., Revenue, File No.630 of 1863-64, No.1494.
superiority of the coal from the Makum field, which he considered to be "the coal field of Assam." In the Namchik river he observed three thick beds of coal within a length of a section of 200 feet, and was of the opinion that the Makum coal, and that in the above mentioned river belonged, beyond reasonable doubt, to the same band. He considered the supply of coal from this field to be practically unlimited. However, he pointed out the difficulties involved in extraction of the coal due to steep gradient of the hills. Finally, the neglect of the upper Assam coal, notwithstanding its proved excellence, and the causes which had led to this were reviewed, and suggestions were made with reference to the system on which the coal fields be leased out. At the time of Medlicott's visit, the authorities at Sibsagar stated that they could not undertake to protect his camps in the interior region. Hence no effective examination of the Nazira coalfield was then possible. Another geological survey of the coal fields was undertaken in 1874-76 by Mallet of the Geological survey of India. He named five coalfields in his report viz. those of Makum, Jaipur, Nazira, Jhanzi and Desoi. Besides these, he also traced the existence of coal in the further extensions of the Naga Hills up the Dihing Valley. Mallet also considered the Makum field the most important. Yet, in spite of these repeated assertions, no progress was made in the exploitation of the mineral until the formation of the Assam Railways and Trading Company in 1881.

44 ibid.
45 ibid.
INITIAL PROBLEMS

The most serious impediment in the development of the coal industry was the problem of transportation. Owing to the sparse population, uneven topography and backward economy, a good overland communication was not considered feasible. Hence, the only effective means of communication in the state, for a very long time, was by country boats. The Brahmaputra was navigable up to Sadiya. It was because of Assam Railways and Trading Company that the tea industry was able to establish itself even before the start of regular long distance communication. But owing to non-availability of local coal, private steamer services were expensive and the service maintained by the Government was irregular and, therefore, undependable. With the increase in acreages under tea and the discovery of coal, the necessity of a speedier and a more efficient system of communication was keenly felt. After a futile attempt to form a company in 1879, the Assam Railways and Trading Company was formed in 1881 and construction work on the Dibrugarh-Sadiya Railway was undertaken. In 1882 the first railway line was opened from Dibrugarh steamer ghat to Jaipur Road. Two years later, the coalfields of Upper Assam were connected by railway lines.47

In 1866, subsequent to Medlicott's report on the coalfields of Assam, a notification was issued offering grants of coal bearing strata to the public. The area of a single grant was not to exceed 640 acres, a surface rent of 6 annas per acre, but no royalty was charged. The land

was liable to redemption if operations were not commenced within three years of the date on which the grant was made, or if work was suspended for five years or more.

Consequent upon this notification, some speculators did enter the hills for the exploitation of coal on a commercial basis. It is obvious, however, that the terms and conditions were hardly attractive and in the absence of proper communication facilities it was futile to hope that many private entrepreneurs would risk their money in such ventures. Seven grants in all were made under the new terms but all of them lapsed within a few years' time. Moreover, the entry of outsiders into the interior of the hills led to disputes with the Nagas. Colonel Hopkinson, Commissioner of Assam, in his report to the Government, was constrained to remark that "if our relations with the hill tribes have not proceeded from bad to worse, the improvement in them has not been sensible." In fact the encroachment of tribal land for the exploitation of mines and of forests for elephants and rubber led to serious complications resulting from arguments over rent, tribute and boundary. To put an end to all this, the Government of India promulgated in 1873, the Inner Line Regulations. Under these regulations the local authorities were empowered to prohibit British subjects generally, or those of specified classes, from going beyond the line without a pass from the Deputy Commissioner. This regulation made it extremely difficult for outsiders to accept any grant beyond the line or under a tenure from any Chief or tribe for the commercial exploitation of their economic resources.  

The new difficulties created by the Inner Line Regulations was thus apparent. Colonel Keating, the new Chief Commissioner of Assam, realised the importance of attracting private enterprise and also perceived the necessity of the development of the Dikhow coalfields which were situated beyond the Inner Line. He, therefore, submitted a proposal to the Governor-General-in-council to aid the exploitation of the coal reserves in this area. The proposal was turned down as it was in direct contravention of the Inner Line Regulations made two years earlier. The Chief Commissioner was convinced that if these valuable deposits were to be opened up by private enterprise, more favourable terms would have to be offered to the promoters of the undertakings. Accordingly, in 1875, he framed new rules of mining lease whereby coal mining sites not exceeding 50 acres were leased out for three years, but the holding of more than one site in the same grant was prohibited. These terms, too, were not attractive enough and Keating's Successor, Stuart Bayley, pleaded for a revision of the rules. He wrote:

Unless the indispensable preliminary of providing cheap and certain communication from the mines to the river is first undertaken by the Government, it is certain that no lease will be applied for. It can pay no one whose lease is restricted to 50 acres to undergo the risks, with the certainty that competitors will profit by his failures; nor could it pay such individual speculators to attempt the improvement of communications. Unless the Government are prepared themselves to provide these

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51 F.P.P., March 1880(B) No. 316-17.
52 ibid
means of communications, he is convinced that the
lease can only be profitably worked if sufficient
inducement is given to a company to provide their
means of communication; and he is inclined to
believe that in practice, the only sufficient
inducement will be a virtual monopoly of one or
other of the coalfields.

This view was at last accepted by the Government of
India and in 1881 a lease was issued to Messrs Shaw
Finlayson and Company for not more than 30 sq. miles in
the Makum coalfields. The term of the lease was 20 years
and the rent charged Rs.50/- per square mile merging into
a royalty of 3 annas per ton of coal quarried.\(^55\) In the
meanwhile, in view of the Assam Company's smooth working
of the mines for the last thirty years, official
recognition was given to the Company's claim to work on
the Dikhow coalfields on an extended scale.\(^56\) In
accordance with the orders of the Government of India,
agreements were executed in 1881 between the Assam
Company and the Nagas in the presence of the Deputy
Commissioner. The Company agreed to pay royalty to the
Government at the rate of 4 annas a ton, to accept the
arbitration of the Deputy Commissioner in every case of
dispute arising between them and the Nagas, to the
reservation of the local Government of the right to
enforce the Inner Line Regulation against the Company at
any time and to the proviso that the Government should
not be responsible for giving any protection to the
Company beyond that which the ordinary resources at the


disposal of the Deputy Commissioner might enable him to afford. The Assam Company furthermore was authorised to mine coal and cut timber and bamboo, within the specified areas on condition that they paid a yearly rent to the Nagas at the following rates:

- To the Chiefs of the Namsang Village Rs.70/-
- To the Chiefs of the Kongon Village Rs.65/-
- To the Chiefs of the Jaktung Village Rs.20/-

Total Rs.155/-

The construction of a metre gauge railway line connecting the coalfields on the Dihing with the Brahmaputra in 1882 was an event of far reaching importance to the coal industry. In the same year the Makum(Ledo) field was taken by the Assam Railways and Trading Company on lease. The work on this field was started by the Company's engineer George Turner, a mining engineer from South Staffordshire, who was a pioneer in the field. He recorded that on his arrival in the Patkai Hills, he saw nothing but "jungles and outcrop", but on his departure a few years later, he left "working and prosperous collieries." At last work was begun on an extensive scale. In the Tikak, Upper Ledo and Ledo Valley Mines work was begun in 1882 and on the Namdang and Tirap grants in 1897-98. The output of coal had

57 F.P.P., March 1881, (B), Nos. 314-317.
steadily risen from 118,000 tons in 1889-90 to 2,42,000 tons in 1899-1900, and the capital invested in the collieries was about £360,000. It is significant to note here that although the grantee, in cases of coal grants, was to pay annually a royalty of 1 anna on each maund of coal extracted besides the surface rent, in actual effect the Government never claimed this royalty. This acted as a partial incentive to speculators who had to face innumerable difficulties in the beginning.

The problem of transportation was just one of the major hurdles. Another equally grave problem was that of labour. The coal reserves were located at extremely desolate areas literally covered with dense forests and infested with a variety of insects and wild animals. To these places labour had to be attracted, their houses built, medical services and sanitation provided, foodstuffs and other necessities supplied, and training made available to the majority in their new occupations. The local people, as has been noted earlier, were not keen on working as wage labourers. Hence, like the tea industry, the coal industry too, was obliged to recruit workers from other parts of India. Management and capital were both, invariably, European.

In 1882 George Turner had set sail from Britain with fifty British workmen of various trades. On his arrival at the Patkai Hills he found the Nagas at work

cutting the timber and clearing the jungle on the site of the settlement. He Wrote 63:

The Nagas are renowned for their powers of cutting down timber and clearing jungle; they appear to take kindly to the cutting of coal on the surface of the hill, but are at present afraid of tunnelling or mining.....They are not accustomed to earthwork and it had yet to be seen whether they will undertake this.

Since nothing could tempt the Nagas to take up underground work, Indian mine workers 64 from Bengal coalfields were at first engaged. However

These, on arrival, wished to work in their own fashion. As the mining required from them was unlike anything they had seen or done before, it was soon found out that to introduce the South Staffordshire method of getting thick coal in India, it would be better at once to begin at the beginning and train up to the work young Indians, who had never seen a coalmine, under selected thick-coal miners.

A letter to the Directors in June 1881 stated that in the above suggestion lay the real solution to the problem. 65

In the early years, the colliery labour force included not only men from the United Provinces, Bihar and the Central Provinces, Makranis and Peshwaris, but also Chinese. 66 The Ledo and Tikak estates were worked mainly through labourers imported on contracts under the Labour and Emigration Act. These were ignorant persons recruited in distant districts and for the most part,

64 ibid., p 28.
65 ibid., p 27.
66 ibid., p 36.
without any previous knowledge of the conditions of the estate on which they contract to labour. They were brought under long terms of contract, extending to four or five years, and were compelled to remain on the estates to serve out the full period of their contracts under stringent criminal penalties. They were also subject to summary arrest by their employers if they endeavoured to leave their service without permission. The only justification of this system of penal contracts was in the co-relative obligations which the law imposed on the employer. One of the most important of these was the obligation to maintain the labourers in good health. "This obligation," wrote the Deputy Commissioner of Lakhimpur, "the Assam Railways and Trading Company have failed to discharge in regard to their labour force under Act Contracts." 67

The unhealthy conditions of the mining estates were pointed out in the inspection remarks of the medical officer. 68 He mentioned that impure water and very heavy working hours underground were the principal causes of the high death rate in the mines. A Committee was consequently appointed to look into the matter. The following recommendations were made by the Committee: 69

(1) Stricter supervision in recruiting. Full powers

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67 A.S.R., Revenue and Agriculture, August 1894, No.327/3849 Engn.R.
68 ibid., Prog. No.110, Aug. 1894.
69 ibid., Prog. No.1, Aug. 1894, 4C 327/3849 Engn. R.
should be given to the local managers and medical officers to reject and return unsuitable coolies.

(ii) Improved quarantine arrangements and measures for the prevention of cholera.

(iii) Reduction of hours of labour.

(iv) Supply of blankets to labourers.

(v) Filtration of water supply.

(vi) Proper sanitation facilities to be provided.

(vii) At least one clean hospital with qualified hospital assistants at each colliery should be set up.

It was further recommended that coolies from the North Western Provinces, though cheaper, were not to be recruited as they were unsuitable and that "recruitment should be restricted to Santhals, Borahs, Bournis, Dhangers etc., who are the only classes or nationalities suited to working in the mines." 70

The following table shows the death rate in the labour force of the Assam Railways and Trading Company for the years 1886-1890.

70 ibid., Prog. No.111, Aug. 1894.
## Mortality Rates of the Labour Force of the A.R. & T. Co

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<td><strong>DEATH RATE</strong></td>
<td>8.00</td>
<td>8.30</td>
<td>9.90</td>
<td>9.10</td>
<td>17.80</td>
</tr>
</tbody>
</table>

### Total

<table>
<thead>
<tr>
<th></th>
<th>1581</th>
<th>137</th>
<th>1809</th>
<th>132</th>
<th>1974</th>
<th>2367</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEATH</strong></td>
<td>8.70</td>
<td>7.30</td>
<td>6.50</td>
<td>7.50</td>
<td>6.60</td>
<td></td>
</tr>
<tr>
<td><strong>DEATH RATE</strong></td>
<td>5.50</td>
<td>4.30</td>
<td>3.60</td>
<td>3.80</td>
<td>2.80</td>
<td></td>
</tr>
</tbody>
</table>

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71 ibid., Prog. No.156, August 1894.
In justification of its policy, the Board of Control of the Assam Railways and Trading Company wrote to the Deputy Commissioner, stating the following:  

It is not as if the coolies were taken from districts which enjoy a high standard of health. It should be remembered that the recruiting districts are subject to frequent tornadoes of pestilence reinforced by periodical famines which sweep away the inhabitants in thousands. The vital statistics of the mines show no grounds for restricting the importation of coolies from the congested districts of India into a district in which they can earn good wages and improve their condition. If the imperial Government, with all its resources, money and scientific skill at its disposal failed to prevent such excessive sickness among British troops at old and long established institutions, it should surely not excite surprise, however much it is to be regretted, that in this settlement excessive sickness prevails.

While appreciating the difficult circumstances, the authorities nevertheless pointed out the necessity of reducing the hours of work of the miners in Assam who were compelled to work at least 9½ hours daily, without any rest whatsoever. Furthermore there was no official break in which they could return to their homes and eat a warm, comfortable and well cooked meal. The hours of work were normally from 7 A.M. to 4.30 P.M., high even by Indian standards, as the working shift in all other collieries did not exceed eight hours. Yet, in spite of these recommendations little was done to alleviate the condition of the miners during the period of our study. The Assam Railways and Trading Company records that apart from mining classes, the labourers were also instructed


73 Death rate of British Troops due to sickness: Peshawar 1867-12%; 1869-14.5%; 1879-14.6% and Allahabad 1869-15.8%; 1879-11.6%.

74 Ibid., Prog. No.110.

75 Ibid., Prog. No.130.
in first aid and health care, but for all practical purposes, divination and incantation were more often resorted to than the application of proper medicine in curing diseases.

METHOD OF MINING

At this point it will perhaps be pertinent to mention the method of mining coal, which was prevalent at that time in Assam. Unlike the popular conception of coal mining where the coal seam is approached from the surface by a deep vertical shaft, in Assam the approach to mines was through a horizontal tunnel, or more precisely one which sloped imperceptibly upwards from the pit's mouth. A tunnel was driven into the hill until the seam was reached, at which point, underground roadways, known as main roads, were driven horizontally along the seam for a distance of up to two miles. The seam itself being at an inclination varying from 30° to 60°, inclined roadways, known as 'chaurs' were then driven up the seam. At various points in the Chauris, further roads were driven horizontally. Coal was brought from the working faces along these horizontal roads and lowered down the chauris by means of gravity-operated tramways, known as "jigs", to the main roads and then to the mouth of the pit. Owing to the uncertain nature of the strata, the roofs of the underground roadways were usually supported by steel arches and girders, timber and masonry. Wherever convenient, metre gauge railway sidings were constructed as near the pit head as possible. Where this was not possible, two-feet gauge tracks were constructed over difficult terrain to carry the coal from the mouth of the pit to the railhead.

## COAL MINES WORKED IN THE ASSAM VALLEY - 1894

<table>
<thead>
<tr>
<th>DISTRICTS</th>
<th>NAME OF MINE</th>
<th>OWNER OF MINE</th>
<th>SITUATION OF MINE</th>
<th>NEAREST STATION</th>
<th>DISTANCE TO STATION</th>
<th>MEANS OF GETTING TO AND FROM STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sibsagar</td>
<td>Dikhu Valley</td>
<td>Assam Tea Co.</td>
<td>Sibsagar, Sadr Sub-Division</td>
<td>Dikhu and Disangmukh</td>
<td>30 miles</td>
<td>Road &amp; River to within 5 miles of mine.</td>
</tr>
<tr>
<td></td>
<td>Tekok</td>
<td>A.R. &amp; T. Co.</td>
<td>Tekok and Ledo Hills</td>
<td>Dihing Bridge Railway Station</td>
<td>6 Miles</td>
<td>Rail</td>
</tr>
<tr>
<td></td>
<td>Ledo</td>
<td>A.R. &amp; T. Co.</td>
<td>Mines are situated on the Tirap &amp; Namdang Hills</td>
<td>Dihing Bridge Railway Station and Margherita</td>
<td>8 Miles</td>
<td>Rails</td>
</tr>
<tr>
<td>Lakhimpur</td>
<td>Tirap</td>
<td>-do-</td>
<td>-do-</td>
<td></td>
<td>11 Miles</td>
<td>Rail</td>
</tr>
<tr>
<td></td>
<td>Namdang</td>
<td>-do-</td>
<td>-do-</td>
<td></td>
<td>9 Miles</td>
<td>Rail</td>
</tr>
</tbody>
</table>

79 A.S.R., Revenue and Agriculture, April 1895, Prog. No.13.
CONSUMPTION PATTERN

By the beginning of the twentieth century, Assam had become self-sufficient in coal. In 1903 the total output was 293,000 tons. There were 1,200 miners under the supervision of nine Europeans. It was an accepted fact, nevertheless, that coal production in Assam would be limited for many years. The coal industry was intimately connected with the transport system, and even in Assam itself, until the construction of the Assam Bengal Railway, sales were limited to the tea gardens and steamers on the Brahmaputra. For many years, however, substantial quantities of coal were sent to Calcutta and in 1893 the stocks of the Assam Railways and Trading Company at Calcutta amounted to 60,000 tons. From here the coal was shipped to various shipping companies for consumption in ocean going vessels; but this proved unprofitable and was discontinued. The supply of coal was henceforth concentrated on the tea gardens which had formerly depended largely on wood as fuel. The planters were relieved to get suppliers of good quality coal at reasonable prices.

The discovery of coal in Assam was indeed an important event which could have been utilised for the modernisation of technology at local levels. Had the British Government so desired, the industrialisation of Assam, on a large scale, could have been on the agenda as

82 The price of coal at Koliamukh, which was 125 miles away from the mines was only 7 annas per maund.
Coal was locally available in abundance. Besides coal, there was also iron. It was indeed these two minerals which had accelerated the process of industrial growth in England. But Assam, like the rest of India, was passing through a process of deindustrialisation to conform to the policy of the colonial administration whereby she could be used as a market for the industrial products of Britain. Thus, like the tea industry, the coal industry, too, was a potent instrument for the promotion of the colonial interest. The increasing demand for coal was met by enterprise initiated and run by foreign capitalists who sent the profits home, brought their manufactured goods from abroad and seldom identified themselves with the local interest. The coal industry thus had little impact on the local economy.