

## Builders of Trans-Siberian Railway

The first sod of the longest railway on earth was turned by the last of the Tsars in 1891; Hilda Hookham describes an epic process of construction, with the line finally completed in 1904.

'Great Railway from London to China', *Punch* announced facetiously in 1842. Satirizing the contemporary railway mania. *Punch* suggested that the line should go from St. Paul's to Peking, by way of a tunnel through the centre of the earth. Prospective speculators were assured that the track would be driven through rocks solid with gold and silver, and caverns of precious stones.

Half a century later a Mr. Dali (or Dull?) proposed building a trans-Siberian tramway, using the abundant local horses as motive-power, thereby reducing the danger of setting fire to the *taiga*. Fantasy gave way to reality in 1904 when the Siberian Magistral was opened, the longest railway on earth.

Railways developed late in Russia, though not for lack of engineering talent. The serf Cherepanov, employed in a Ural copper-smelting works, constructed a steam-engine in 1833. He was sent to England by the factory-owners, and on his return designed and constructed a 'dry-land' steamer, which was used to transport ore to the factory furnaces. Although the Tsar and his ministers feared railways as harbingers of social disturbance, a line was constructed in 1838, to connect the capital, St. Petersburg, with the imperial summer palace at Tsarskoye Selo, twenty miles away.

Foreign engineers were employed (French nationals excepted—for the Tsar thought that Frenchmen were infected by the bug of revolution). Engines too came from abroad—appropriately named 'Nimble', 'Arrow', 'Knight', 'Elephant', 'Eagle', and 'Lion'. Between the tenders and the passenger wagons two open trucks were loaded with sacks of sawdust to provide soft landings for passengers pitched forward in any accident.

Further rail development was slow. The line between St. Petersburg and Moscow was not completed until the early fifties, and up to 1885 there was no railway beyond the Urals. Yet the vast natural resources of the trans-Ural territories of Siberia cried out for people and for improved communications. From the middle of the nineteenth century onwards domestic and foreign commercial interests began to demand the construction of a Siberian railway.

By the nineties the Tsar's adventures in the Far East brought the question to a head, and the construction of the Siberian line, a state project, began in 1891. The first sod was turned at Vladivostok in May 1891 by the Tsarevitch himself (the last of the Romanovs). The route chosen followed in the main the old Moscow-Siberian post road, the trail along which generations of convicts had trudged into exile, their womenfolk and children bringing up the rear.

Newspaper correspondents, businessmen and other adventurers rushed to acquaint themselves with this eighth wonder of the world, the new Magistral that linked the Baltic with the Sea of Tartary, the capitals of Europe with far Asia, the people of cis-Ural with those beyond the Great Wall. Engineers praised the bridges and scoffed at the lightness of the rails.

Journalists marvelled at the *train de luxe* fitted with a church-car, 'saloons, bathrooms, library, telephones, electric lighting, a piano, and means of gymnastic exercise'<sup>1</sup>, and at the frequency of breakdowns. Investors rejoiced in the high profits to be made in the newly opened markets. Foreign agents began to calculate the strategic significance and the imbalance of power on the Pacific. The efforts of the men who built the line remained unnoticed. They had been even more pitilessly exploited than those Nekrassov had depicted in a poem a generation earlier:

'Straight is the road, the cutting narrow;

Alongside the mileposts, the rails and the bridges,

The mobilization of the labour force presented the greatest difficulty in building the railway. At the end of the nineteenth century when the project started, Siberia was thinly populated (1.52 per sq. verst)<sup>3</sup>, economically backward, lacking industrial development and communications. Less than a third of the labour force of nearly 100,000 eventually recruited were local inhabitants. Siberia had no skilled workers or navvies.

Lack of skill and the absence of technical equipment meant a very low productivity of labour. Coarse ballast, for example, was first broken up by dynamite, then further reduced by shovels, picks and hammers. Medium ballast was dug by spade and carried away in wheelbarrows and carts. Unskilled local labour was used mainly in earthworks, in cutting and preparing timber, and for the carriage of fuel and ballast.

The local population, especially in the east, came from villages almost completely isolated from the outside world, ignorant of the use of wheelbarrows for the carriage of ballast. Some villages in the Ussur region in the Far East had no carts because there were no roads. And local labour was liable to disappear during the spring sowing and autumn harvest.

The sources of labour varied from section to section. Regions closest to European Russia were most favourably situated. The central and eastern sections were difficult because there were no approach roads for men or materials. In 1897 on the mid-Siberian section nearly forty per cent, of the labour, including most of the skilled hands, came from the famine areas of European Russia; thousands were shipped from Odessa and made the five weeks' journey through Suez across the Indian ocean to Vladivostok, where they joined the gangs constructing the line from the eastern end.

Thirty-five per cent, of the labour force was convicts and exiles; a quarter were foreign workers, including many Chinese and Koreans working on the eastern sections; the rest included Italian (some five hundred), German and Finnish craftsmen, who came to the ends of the earth in search of higher wages.

Evidence regarding the composition and conditions of the labour force has only recently been investigated<sup>4</sup>, and data is still not complete.

Workers were enlisted by contractors and state foremen, who took away their identity papers in return for record books. These were kept in the contractors' offices and on completion of the work they were usually destroyed. Over 800 contracts have survived, however, together with the reports of the medical units working on the line.<sup>5</sup>

To speed up construction, the line of over 7,000 versts (4,600 miles in length) was divided into sections, on which work began simultaneously. The west Siberian section, from Cheliabinsk, in the Urals, to the Ob, was built by 1895; at the same time, work had pushed ahead on the southern and northern Ussur sections in the Far East, reaching Khabarovsk in 1897; the Trans-Baikal section, linking Lake Baikal with Sretensk, was completed in 1900.

The Sretensk-Khabarovsk section along the Amur was abandoned at this stage in favour of the trans-Manchurian line to Vladivostok (the Chinese Eastern Railway), for which arrangements were negotiated in 1896 by S. Witte and Li Hung Chang. The mid-Siberian Section from the Ob to Irkutsk near Baikal reached the Lake in 1898. Here the work paused, because of the practical difficulties of running the line along the cliff shores of Baikal, the deepest lake in the world.

In summer the train was ferried across the Lake, nearly fifty miles wide, by the ice-breaker/ferry-boat *Baikal*, ordered from Messrs. Armstrong Whitworth of Newcastle. The vessel was constructed in some six months, packed in sections and sent by ocean steamer to St. Petersburg; thence the 7,000 packages were taken by rail to Krasnoyarsk, which was by then the eastern limit of the line. The consignment, which weighed 2,700 tons, was carried by barge and sledges along the final thousand miles to Baikal shore, by which stage a number of the parts had been lost.

Russian workmen assembled the ship without benefit of shipyard facilities, and the *Baikal* (burning wood fuel) was successfully launched in July 1899. Although customs and transport added 129 per cent, to the original cost of the

ship in England, the authorities were well pleased and a second ship, the *Angara*, was ordered from Britain. The first ship was destroyed by White Guards in the Civil War. The twin stacks of the second may still be seen plying the waters of the bottomless lake.

Baikal is frozen over for nearly five months of the year, and in winter lines were put on the ice and horses were used to haul the trains. *The Times* reporter Colquhoun<sup>6</sup> noted that the track across the ice was dotted with booths and stations and that the traffic was cleared just as the whole surface was about to give way.

An official report admitted that a crack once opened up alongside the rails for a length of twenty kilometres<sup>7</sup>. Strained Pacific relations, and the outbreak of the Russo-Japanese war, emphasized the weakness of this link in the Siberian Magistral; the Baikal loop-line was hastened and completed in 1904.<sup>8</sup>

The number of workers on the construction of the line fluctuated according to season and to section, and most of them were only temporarily employed. Excluding the special case of the Baikal loop, the Trans-Siberian line was laid by half the number of workers on average per verst (thirty-four) than had been employed on the construction of railways in European Russia (seventy-two). Despite this, the official account claimed that the Trans-Siberian was the fastest built railway in the world: the annual rate of 642 versts between 1891 and 1900 being half as fast again as the Canadian transcontinental rate of 438 versts.<sup>9</sup>

Colquhoun, while recognizing the deficiencies of the line, compared the overall rate of progress in Siberia favourably with that in America: 'while 6 versts—the highest rate achieved by the Russians—is poor in comparison with the ten and a half miles credited to the American brain and Chinese labour on the San Francisco section of the American line, the Americans on the other hand took nearly seven years to complete a distance of 1,800 miles, whereas in Siberia nearly a thousand miles in addition was accomplished in less than 8 years.' He pointed out that the natural difficulties on the American line were much greater, but the working season in Siberia lasted only from April to September; at other times the ground was too hard.<sup>10</sup>

The adverse conditions are revealed in the contracts and account books of the workers as well as in the archives of the State Committee of the Siberian Railway. The contractors organized the workers into gangs, appointed foremen, and transported them to assembly points for despatch to the construction sites. Any delays, or an absence of one member of a gang, usually resulted in a general fine for the whole gang, which was obliged to find a replacement and to work off any advance payment made to the missing worker.

The law did not oblige contractors to maintain workers on the journey from their homes; some engaged to do so in the contract but failed to honour the obligation. The workers had no redress for non-fulfilment of contract. The port of Odessa Sanitary Committee ordered the destruction of unhygienic food that had been prepared for workers engaged by contractor Y. F. Fomin for work on the Ussur section.

Fomin refused to purchase supplementary food for the journey round the world. He despatched one party of ninety-eight workers from Odessa, and sent a former gunner on reserve, Gavrilovich, to accompany them as foreman. Brutal treatment and poor food resulted in a revolt on the steamer while crossing the Indian Ocean.

Gavrilovich took flight at the nearest port. The ship's captain arrested seven leaders and landed them at Colombo. The remaining workers received no employment on arrival at *Vladivostok*, and took to begging. They were arrested as vagrants and sent back, stage by stage, to their homeland.

The farther east the line went, the greater was the difficulty in hiring native labour, and the more expensive it became to bring workers from Europe. Early in 1891, the Minister of Internal Affairs, Durnovo, expressed fears that the introduction of contract labour into the Far Eastern sections of the line would give rise to revolutionary activities in that area.

It was for this reason, and for motives of economy, that he approved the use of convicts and exiles for the Ussur line. Later the use of convict labour was extended to the mid-Siberian line and to other sections, with arrangements for the remission of sentences by one third for satisfactory work. Some 13,500 convicts and exiles were used in construction work along the whole line.

Soldiers were also employed on the Trans-Baikal and Ussur sections. They had been used on construction work in these regions since the 1870's. Several thousand soldiers from local battalions were engaged along the line by the end of the century.

It was reported in the newspaper Vladivostok, in August 1894, that the Ussur line was laid by shift work, each shift of soldiers working from fifteen to eighteen hours a day. Day and night they hauled the rails, sleepers and ballast on their own backs. After a full day's work, the soldiers had sessions of military training; they were also instructed in methods of destroying the railway in the event of war.

Hired workers were spurred on by the hope of good wages and by fear of famine and unemployment, especially in the period of crisis at the beginning of the twentieth century.<sup>11</sup> The main body of construction workers were paid at rates varying from forty-five kopeks to two rubles a day.

These rates were twice as high as those paid in European Russia. S. Turner, the representative of a London firm of provision importers, who went to Siberia in 1903 to investigate the golden prospects of butter production, gave an indication of comparative rates of pay. 'Labour is cheaper there (in Siberia) than in any other butter-producing country of the world, the labourer receiving about one twelfth the wages paid for the same class of work in Canada.'

Turner also reported that the building of the Siberian line had helped to raise wages. A Danish expert who had opened dairies in south Siberia 'paid one ruble (2s. 1½d.) a day of 21 hours for dairy hands in June, July and August, when milk is most plentiful, and ½ ruble (1s. ¾d.) a day of 12 hours during the remaining nine months'.<sup>12</sup> Simpson observed that the usual daily wage for navvies along the line was 1¼ rubles.<sup>13</sup>

The contractors made wages agreements with the workers on the basis of fixed norms, the 'task', which only the toughest could fulfil. They bribed the stronger workers to carry out a job and set a norm. Non-fulfilment of the task by other workers resulted in fines. Frequently the majority found the norms set by the 'black hands', as they were called, beyond them, and lost a good part of their wages.

The nominal wages were never in fact paid; the contractors and other intermediaries had a full repertoire of deceptions against which the workers—most of whom were illiterate—were defenceless. The Railway Administration paid the contractors according to the number and skill of their workers, the hours worked and the tasks achieved. A mere fraction of these funds reached the workers. The contracts specified an extensive list of fines, for such matters as non-accomplishment of task, damage to tools, disorderly and disrespectful behaviour.

There were deductions for real and fictitious 'advances' made, for transport to the construction site, for food, clothing and tools received from state warehouses, and for 'rent'. The contractors frequently ignored their commitment to provide housing. One group on the mid-Siberian line reported:

*'They tipped us out of the carts. We looked around and there was nothing to be seen. They hadn't even built any barracks for us. The foreman said 'Fend for yourselves, boys'. We put our knapsacks down on the snow... we dug out some sort of a pit, built a framework with poles over it and covered it with earth and turfs. The den was ready'.<sup>14</sup>*

'Rents' for such accommodation normally accounted for thirty to forty per cent, of the wages.

Food and clothing could be obtained from local warehouses by credit systems recorded in the workers' account books. Gang leaders and foremen recorded their own withdrawals on the accounts of others. One witness recalled that individual workers would be credited with consuming fantastic quantities of tea and other items, with wearing out several pairs of boots and birchbark shoes in a matter of weeks; nonsmokers were debited with large quantities of tobacco. Food supplied by contractors was frequently uneatable. *The Times* correspondent reported that:

*'construction of the Great Siberian Railway has hardly begun and we already hear of strikes taking place among the workmen. On the south Ussur section in the Amur region several hundreds of navvies have been engaged from the province of Grodno in Poland, who are bound by very severe conditions of contract. It was soon seen that the provisions supplied were not in accordance with the promises made by the contractor. They declare that the meat was unfit for food and the bread such as one could not even give it to pigs.*

*A long series of disputes followed between the workmen and the manager of the victualling business. Affairs did not improve, the workmen appealed to the police without obtaining redress. They then seized and maltreated a representative of the purveyor. The police officers arrested six men whereupon the whole body struck. The contractor insists on energetic action on the part of the authorities and the calling in of troops to work.'*<sup>15</sup>

The exile workers were particularly vulnerable. The archives contain an order No. 17 (February 7th, 1894) issued by Komorsky, who combined the work of prison inspector with that of chief of the railway convict unit. It drew the attention of a medical commission to the fact that exiles should not be permitted to take from the fire the remains of rotten fish that had been condemned by the commission to be burnt.<sup>16</sup>

A government committee investigating the accounts of this Komorsky refused to endorse the sum of nearly 12,000 rubles which he had claimed for tools and other materials for railway work. In fact 1,000 rubles of this had been spent by Komorsky on a private orchestra, and 300 went to pay his personal cook. Many thousands went as bribes to supervisors.

The contractors who came with the first gangs were accompanied by a host of parasites. Publicans, saloon keepers were protected by the police and by the local administration. These 'fleecing shops' kept open as a rule twenty-four hours a day, and deprived the workers of their remaining kopeks for vodka adulterated with raw spirits.

The debauches in these places far exceeded, according to the newspaper *Yenesei*, those witnessed each autumn on the arrival of the workers from the gold mines. Some of the railway constructors, having received what was left of their pay on a Saturday, remained in the public houses until the following Thursday.

The workers paid with their health if not with their lives on the construction sites. On the circum-Baikal line the rate of accidents was exceptionally high—368 persons per verst of line. Most accidents were caused by the collapse of structures, falls, explosions, and careless use of tools. A high rate of accidents was also due to the disturbances customary along the line on holidays and on Sundays. Nearly seventy per cent, of the illnesses were associated with poor living conditions and food—bronchitis, rheumatism, fevers, scurvy, digestive and skin diseases. The most frequent causes of death were Asiatic fever, typhus, scurvy, plague, dysentery, acute catarrh of the stomach, and shock.

The few hospitals and medical centres set up at various points along the line were quite inadequate to deal with individual sickness, much less the epidemics of virulent influenza, plague and cholera. On the Trans-Baikal line it was recognized that when a worker died he remained on ice for three months before a doctor came.

Despite these conditions, the Siberian press maintained that most of the workers, if not excessively harassed by contractors and foremen, were well disciplined, hard workers, and were seldom absent. Official reports acknowledged the achievements of the convict labour. J.Y. Simpson wrote that in Siberia the land was rich and there was a royal waste of everything—time, space, natural products.<sup>17</sup> The great Siberian Railway squandered a more precious resource, working people, with which Siberia was least well endowed.

*'There is a Tsar in this world without mercy:*

*Hunger is his name.*

*He it was who drove the multitudes hither.*



Crushing the task that he gave:

In the harsh fight to give life to these deserts.

Many have found here a grave.<sup>18</sup>

<sup>1</sup> *The Times*, April 1st, 1898; the line was then running as far as Tomsk.

<sup>2</sup> N. A. Nekrassov, *The Railway*.

<sup>3</sup> One verst:  $\frac{2}{3}$  of a mile.

<sup>4</sup> V. F. Borzunov: *Materials on the Building of the Siberian Railway, 1890-1904* (Moscow, 1965).

<sup>5</sup> V. F. Borzunov: *Archive Materials for the History of the Construction of the Siberian Railway, 1880-1905* (Acad. Sciences of U.S.S.R., No. 5, 1960).

<sup>6</sup> A. R. Colquhoun, *Overland to China*, 1900.

<sup>7</sup> A. N. de Koulomzine, *Le Transsibériene*, 1904.

<sup>8</sup> A recent power-station dam across the R. Angara, which flows from Baikal, has raised the level of the Lake several feet, and the original line with its numerous tunnels has disappeared. It has been replaced by a re-routed, electrified track.

<sup>9</sup> Sabler and Sosnovski: *Trans-Siberian Railway*, St. Petersburg, 1903.

<sup>10</sup> Ibid.

<sup>11</sup> '...the pines, Mute witnesses of time and its distance, of my great grandfather and of others, In exile here after a peasants rising. . . Ukrainian peasants ... My great grandfather starved all through his life, The innumerable badness of those harvests': Y. Yevtushenko *Zima Junction* tr. Milner-Gulland & Levi (Penguin). Zima (literally-winter) is a station west of Baikal, formerly a small exile settlement, halt on the Siberian tract. Not far away is the station Shuba (lit.-fur coat).

<sup>12</sup> S. Turner, *Siberia: A Record of Travel, Climbing and Explorations*, London, 1905.

<sup>13</sup> J. Y. Simpson, *Sidelights On Siberia*, London & Edinburgh, 1898.

<sup>14</sup> V. F. Borzunov, 'Materials...' Moscow, 1965.

<sup>15</sup> *The Times*: Sept. 23rd. 1891.

<sup>16</sup> Borzunov: Ibid.

<sup>17</sup> J. V. Simpson: Ibid.

<sup>18</sup> N. A. Nekrassov, *The Railway*.