

# Expansion of Railway Network

Eiichi Aoki

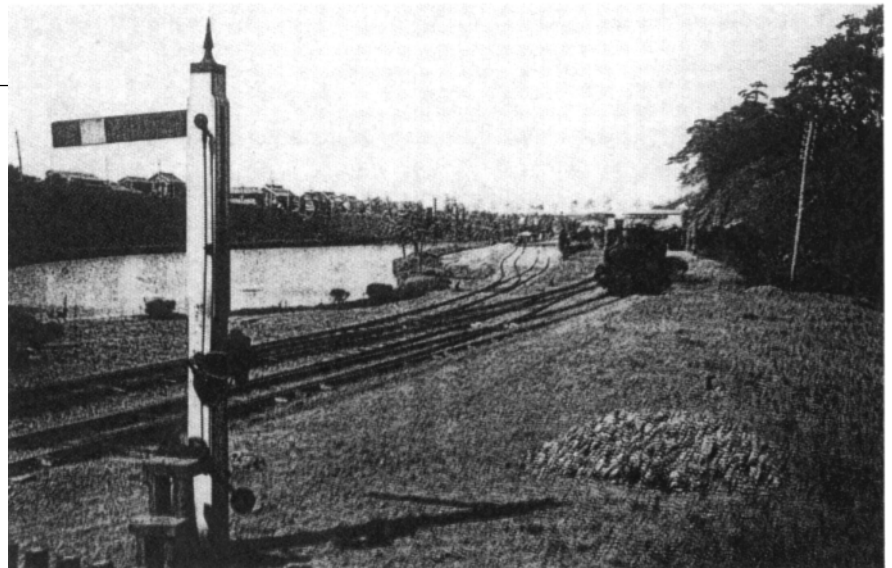
## Opening of Tokaido Line and First Railway Mania

The Meiji government was affected directly by the financial crisis during the second half of 1870s and the project to construct the railway between Tokyo and Osaka/Kobe progressed at a snail's pace. The original route was planned along a main road called Nakasendo running through the central highlands of Honshu, the main island. This route was chosen in an attempt to stimulate economic development in the region. As the government financial reform program, which started in 1880, took effect, the government adopted a policy of promoting railway construction. Part of the budget was collected by selling railway bonds to wayside residents, and the preliminary survey and construction work began in November 1883.

However, the work revealed that the proposed route would run through mountain areas, requiring high costs and long construction times, so the route was changed in 1886 to a new one along the Tokaido, another main road along the Pacific coast. Construction of the new route started in November 1886 and proceeded without serious difficulty. The entire railway between Shimbashi and Kobe was inaugurated on 1 July 1899.

By linking the two largest cities of Tokyo and Kyoto/Osaka, the Tokaido railway was the first major step in the development of railways in Japan.

In the meantime, construction of the section of the Nakasendo railway that



■ Yotsuya Station on the Kōbu Railway in the 1890s, along the outer moat of the Imperial Palace, Tokyo.

Reprinted from RAILWAYS AND ROLLING STOCK IN JAPAN

had been under way at the time of the route change continued, and two sections between Naoetsu and Karuizawa, and Takasaki and Yokogawa started operation in 1885-88. However, construction of the remaining section between Yokogawa and Karuizawa (11.2 km) was hampered by the rugged geography. This section was finally completed in 1893 using an Abt rack-and-pinion system capable of running on the 1/15 gradient.

The robust Japanese economy created by the success of Masayoshi Matsukata's financial reforms, and the success of Nippon Railways, the first private railway, led to the establishment of a number of private railways after 1885 until the 1890 economic recession. The new main lines included the Sanyo, Kyushu, and Kansai railways. In Hokkaido, the government-operated Horonai Railway was

privatised and renamed the Hokkaido *Tanko* (Coal Mine) Railway. The above mentioned railways were called the "Big Five" in private railways. In addition, many private railways serving shorter routes were built in the suburbs of Tokyo and Osaka, and in regional cities. Railway mania had arrived!

In May 1887, the government established the Private Railways Ordinance to ensure uniform standards for railway construction nationwide. In July 1889, Japan's railway networks totalled 880 km for government railways and 840 km for private railways. A ceremony attended by representatives of government and private railways to celebrate the completion of 1,000 miles (1,610 km) of tracks was held in Nagoya.

## Railway Construction Act

In July 1891, Masaru Inoue, Director of the Railway Board announced two important proposals of railway policy. First, he pointed out the need for laws to ensure the establishment of long-term plans for constructing mainline networks, and the issuance of public bonds to obtain funds for constructing railways. Second, he proposed nationalization of private railways forming part of the mainline network. Mr. Inoue was a strong advocate of railway nationalization and reiterated his argument at every occasion. His proposals pointed to the future of railways in Japan and had an important effect on Japan's railway history.

Based on Inoue's proposals, the government sent two bills, the Railway Bond Act and the Railway Nationalization Act to the Imperial Diet. After major amendments, the diet passed the Railway Construction Act in June 1892. Compared to Inoue's original proposal, the Act deleted the provisions for nationalization of private railways, but envisaged much larger railway networks than already planned. It also required Diet approval for major modification of railway construction plans and commencement of new railway construction. Proposing construction of larger railway networks than the government's original plan reflected public demand for early railway construction in local communities, which recognized the value of railways.

The act required the government to submit railway construction plans to the Railway Council for consultation before the submission to the Diet. The Railway Council was composed of officials of the Railway Agency, related authorities, the army, the navy, and Diet members. It was authorized to amend the Railway Construction Act, and to determine railway construction budgets, the licensing and nationalization of private railways, train operation plans, and railway fares.

The Railway Construction Act established detailed rules for railway construction in Japan, and allowed local communities to request construction of railways through their elected Diet members. However, the Railway Construction Act did not apply to

Hokkaido, which came under the Hokkaido Railway Construction Act enacted in May 1896.

## Second Railway Mania and Growth of Mainline Railway Networks

Construction of private railways faced a major setback during the recession around 1890, but became brisk again in 1893. The second railway mania continued until 1897. Construction of government railways was also progressing rapidly under the auspices of the Railway Construction Act.

At the end of March 1893, the total length of railways in Japan reached 3,010 km, divided into 885 km of government railways and 2,125 km of private railways.

By the end of March 1906, immediately before railway nationalization, government railways covered 2,413 km with private railways reaching 5,213 km. Although construction of government railways progressed smoothly, private railways were always built at a faster pace, with the result that, despite frequent mergers, the number of private railway companies increased from 13 in March 1893 to 37 by the end of March 1906.

Private railway companies in Japan at that time were relatively large stock companies generating large profits. This favorable business environment led to the emergence of groups showing strong investment interest in railways. They were divided into two main groups: the zaibatsu or big business group, and commercial capitalists. Typical zaibatsu were Mitsui and Mitsubishi (Iwasaki). They were major shareholders in early mainline railways such as Hokkaido Tanko Railways, Kansai Railways, Sanyo Railways, Kyushu Railways, and Chikuho Railway, earning large profits from railway management. They promoted production and distribution in a variety of industrial fields using railways.

The commercial capitalists were found in the Tokyo-Yokohama and Kyoto-Osaka-Kobe regions and sought profits from management of railway businesses. In addition to mainline railways, they showed great interest in railways in and around large cities. In

the early 1900s, they invested actively in electric streetcar systems (trams) in major urban areas.

During this period, capitalists in the rural regions still played a major financial role, but their financial power was limited, so that capitalists in large cities acted as a major force in financing railway construction projects. Even for many railways associated with local industries or railways in regional cities, capitalists in large cities were indis-



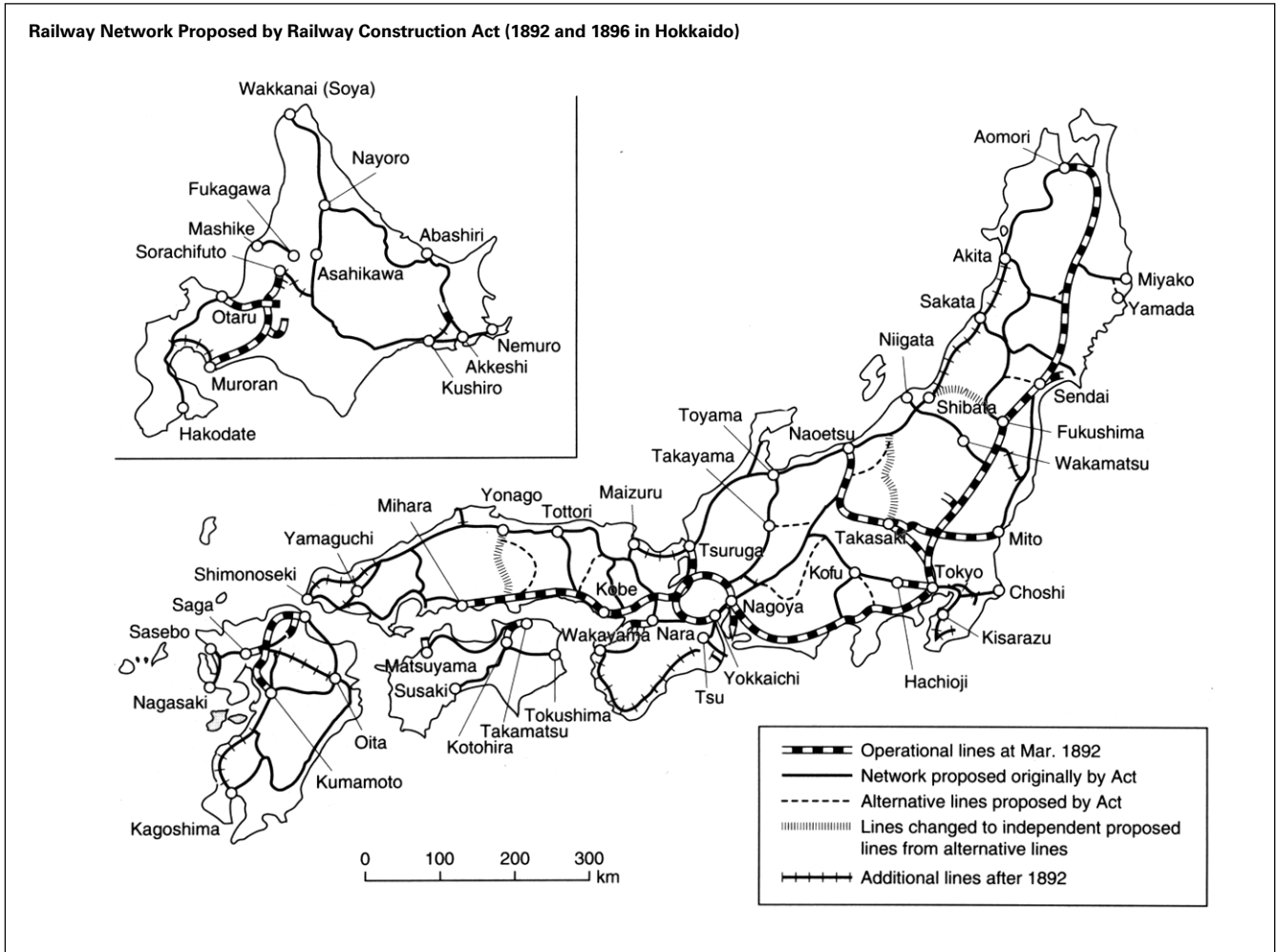
Courtesy: Transportation Museum, Tokyo

### Masaru Inoue (1843-1910)

Masaru Inoue was brought up as the son of a samurai belonging to the Choshu fief. At 15, he entered the Nagasaki Naval Academy established by the Tokugawa government under the direction of a Dutch naval officer. In the early Meiji era, the academy produced many prominent persons who worked as leaders in the military and the government, as well as engineers. In 1863, Inoue and four friends stowed away on a vessel to the United Kingdom. He studied civil engineering and mining at University College in London and returned to Japan in 1868. After working for the government as a technical officer supervising the mining industry, he was appointed Director of the Railway Board in 1871. After temporary retirement, Inoue served as a leader in the government guiding the nascent railway industry until 1893.

During his career, Inoue played a leading role in many decisions related to railway planning and construction, including construction of the Nakasendo Railway, selection of the alternative route (Tokaido), and the proposals for future mainline railway networks. Also, as one of a handful of Japanese railway engineers, he often visited construction sites and directed workers.

After retirement from the government, Inoue founded Kisha Seizo Kaisha, the first locomotive manufacturer in Japan, becoming its first president in 1896. In 1909, he was appointed President of the Imperial Railways Association. He became ill and died in London in 1910 during a visit to Europe as an advisor to the Ministry of Railways.



pensable as major shareholders for financing construction projects.

### Debut of Electric Railways

In May 1890, Tokyo Electric Light Co. (the first electric company in Japan, incorporated in 1884) laid a 500-m track at the Third Internal Industrial Exposition held in Ueno Park, Tokyo, and operated two Spragne electric tramcars imported from Brill & Co. of the USA. This was the first time electric trams operated in Japan.

Blueprints of electric railways boomed in various cities, but many were just speculative projects lacking sound technical resources and backup. The first commercial operation was started by Kyoto Electric Railways on 1 February 1895 running on a 6.9-km route connecting Kyoto station and Fushimi along the Yodo River. The line was later extended to the inner city.

Many railways quickly followed suit: Nagoya Electric Railways (1898), Daishi Electric Railways (Kawasaki, 1899), Odawara Electric Railways (Kozu-Odawara-Hakone Yumoto, 1900), and Hoshu Electric Railways (Oita-Beppu, 1900).

In Tokyo, the Tokyo Horse Railway, which operated a horse railway service from 1882, switched to electric rail cars and became Tokyo Electric Tram Railway. Tokyo Street Railway was inaugurated in the same year, and Tokyo Electric Railway in 1904. The three companies operated electric trams in Tokyo and merged into Tokyo Railway in 1906 and become the electric railway company with the largest network in the country.

In Osaka, the municipal government entered the electric railway business and inaugurated the first route in 1903. It was extended side-by-side with urban development projects, including

construction of new roads, widening of existing roads, and construction of bridges. The railway served as a major source of finances for the city to carry out its plans, and marked the first electric railway operated by a municipality.

With expansion of tram networks, electric railways became an essential means of transport for urbanites. In fact, electric rail services became so important that their management policy affected citizens' daily lives directly and elicited their quick responses. Fare increases often met with passenger protests, escalating into riots in some cases. More-and-more people opposed profiteering by private rail companies in cities, and the need for municipal management was often discussed. In the 1910s, electric railways in large cities that had started as private businesses were gradually taken over by the municipalities. In Tokyo, Tokyo Railway was handed over to the Elec-





■ The Usui Viaduct under construction at a 1:15 grade between Yokokawa and Karuizawa. The track used a rack-and-pinion system. The viaduct is now preserved as a historic monument and has been replaced by an alternative route. *Reprinted from RAILWAYS AND ROLLING STOCK IN JAPAN*

tricity Department of Tokyo Municipal Government in 1911.

Meanwhile, electric railways were extended beyond city administrative limits and started being used for inter-city transport. The first example was Hanshin Electric Railways which started commercial operation between Osaka and Kobe in 1905. In the suburbs, railways were constructed on their own land, instead of public roads, allowing high-speed operation. As a result, electric railways began competing with steam railways. Soon, electric services took many passengers from steam which couldn't provide frequent services. Steam railway companies suffered large losses and were soon forced to change their operations to provide electric railway services in and between cities.

## River Transport and Rail

River transport, which had been the most important distribution route for

commodities in inland areas, was hit hard by railway development. River levels in Japan vary greatly with season; many rivers could only carry barge loads of just a few tons. The lack of mass transport on many rivers made barge transport vulnerable to competition from railways.

However, large river systems (the Tone River in Kanto and the Yodo River flowing from Kyoto to Osaka) offered advantages of stable flows, as well as large demand for freight transport. With modernization by introduction of steamers and canals, river transport continued thriving until 1910. Some railways even became

financially viable by connection to river transport services. ■



### Eiichi Aoki

After graduating from the Faculty of Science at Chiba University in 1957, Mr. Aoki received a doctorate in science from the Tokyo University of Education (now called Tsukuba University). After serving at Tsuru City University and Tokyo Gakugei University as an assistant professor, he became a professor at Tokyo Gakugei University in 1978. He specialises in transportation geography and is also a leading Japanese scholar of the history of railways and marine transportation. Mr. Aoki is now president of the Japan Railway History Society. His publications include *World History of Sea Power and Japanese Railway – Its Rise and Development*.