

# Golden times of rail travel - how a steam locomotive has conquered the new world

History of railways

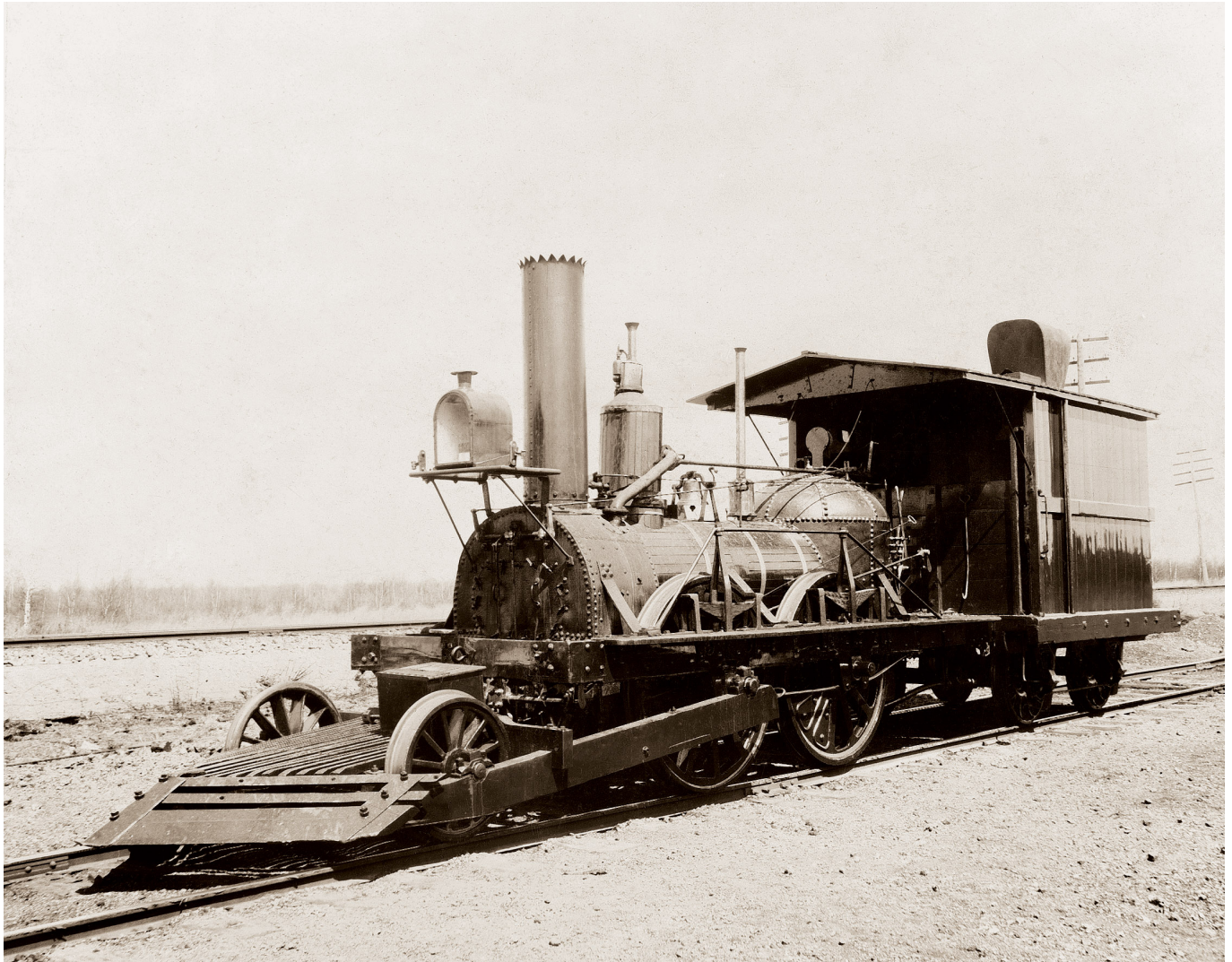
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From the moment steam railway proved reliable to everyone, its good times started. The golden age of railways lasted for more than one hundred years, and in some places much longer. Over that time, railway networks covered the maps of many countries where railway became the main means of passenger and freight transport.

## WHY DID PEOPLE NEED TRAINS?

In the United States the development of transcontinental railways fostered the consolidation of a nation, and later in Russia facilitated revolution. Railway was an essential element of trade and industrial infrastructure in the vast territories of colonies in Africa and Australia.

The competing European nations saw a strategic significance of trains as soon as they were invented. The potential of the new machine allowed the then engineers and technicians put their brave ideas into effect. Changes in daily lives of people due to the existence of railways should be considered revolutionary. Facilitated transport necessitated the introduction of time zones, thus putting an end to people synchronising their clocks at their own discretion or according to the position of the sun. In addition, the development of railways led to transformations in metallurgy, statistics, physics and management, but those were less obvious at a glance. Progress in railway technology contributed to knowledge being expanded in several areas, often by means of various experiments. For more than one hundred years railways were mainly steam-powered, and coal was the core fuel to generate steam. Other sources of energy were also used such as: wood, peat dust, sugarcane stalks, cotton production waste and straw, and from 1890 more and more often oil. The golden age of railways is the period between 1850 and 1920 when it was a main means of transport on land.



The "John Bull" steam locomotive - 1830

### **Millions of passengers and millions of tonnes of cargo**

After 1830 the railway developed rapidly. Trains ran over longer and longer distances and in the United Kingdom itself in 1840 the length of the railway lines was 2,175 miles. They carried more than 70 million passengers and millions of tons of cargo every year. At that time, railway routes were also built in other European countries, although initially it was not determined by economic reasons. Railway was introduced at the request of the rulers as a technical novelty enabling out-of-the-city excursions on Sundays. This was the purpose of, for example, the Nuremberg and Fürth Railway built in 1835 to the order of the king of Bavaria, and the Potsdam and Berlin Railway built to the order of the Prussian king in 1838, as well as the St. Petersburg and Tsarskoye Selo Railway in Russia and the Vienna and Brno Railway in Moravia under Austrian rule.

In France railways emerged in a different way. In 1830 a group of industrialists obtained an administrative approval to build a horse-drawn railway from Lyon to Saint-Étienne, and following its commissioning two years later, they bought locomotives in England leaving no choice to the authorities and the public opinion.

### **Everyone wants a steam locomotive**

In 1832 the first steam locomotive was brought from England over to the United States of America. It was the famous "John Bull" running in the state of New Jersey. Soon, the Americans built their own locomotive. In 1840 the railway system in the USA was already 2,796 miles (4,500 km) long and 10 years later it was extended to 9,321 miles (15,000 km).



The benefits of the introduction of the railway were evident to everyone. So, not only the existing lines in England or the United States were extended but new ones were built, in particular in Europe. In 1844 a railway was put into operation by the Danes (in what is now Germany) and the Swiss. In 1848 the railway reached Spain, in 1849 - Sweden (narrow-gauge), in 1854 - Norway, in 1856 - Portugal and in 1869 - Greece. On the other hand, in 1842 the first railway line was put into operation in what is now Poland (Wrocław-Oława). In turn, in the Kingdom of Poland dependent on Russia, the construction of the first railway line was initiated as soon as in 1835, that is, 7 years before a line was built in Silesia then under the rule of more affluent Prussia. However, the project was completed only on 14 June 1845, when the suburban section of the future Warsaw-Vienna line was commissioned (finished in 1848). At the end of the 19th century the length of the railway lines over the world exceeded 497,000 miles (800,000 km).



Lubricating the engine before departure - USA, 1904

### **More than one hundred factories and thousands of locomotives**

For example, in the 1930s in Europe there were as many as 125 factories building steam locomotives. Some of them, e.g. the Henschel und Sohn Factory in Kassel, which started production in 1848, had as many as 11,000 employees and approximately 1,000 locomotives left the factory every year. North British Loc Co. of England produced 800 locomotives per year, and the German factories Borsig and Schwarzkopf - 600 each. Two American factories: Baldwin and American Locomotive Co. manufactured 3,000 locomotives each.



## One hundred years of dominance

Steam-powered traction was predominant in the railway industry for nearly 100 years. Things changed with the introduction of electric and diesel traction. An electric locomotive turned out to be a particularly dangerous competitor of a steam locomotive. It was presented for the first time - on 31 May 1879 at the Berlin Industrial Exposition - by a German inventor, Ernst Werner von Siemens. It was a small locomotive driven by a 2.5 kW motor, supplied with electric power through a third rail. The electric locomotive was soon improved and in 1881 the first section of the electrically-propelled railway was commissioned on the route from Berlin to Lichterfelde, and in 1903 on the Berlin-Zossen section the electric locomotive broke a speed record travelling 131 miles (211 km) in one hour. And the first diesel locomotive was presented in 1891 by another German inventor - Gottlieb Daimler. The structure was put into service in Germany in 1912.



The historic moment of connecting the sections of the Union Pacific and Central Pacific lines - USA, 1869

## Steam overshadowed by electricity

Soon, the competitors of the steam locomotive, and in particular electric locomotives, proved to be more efficient, more powerful and they performed considerably better. They could travel over long distances without refilling fuel and water, did not require turning at turntables and caused no environmental pollution. Those advantages determined the gradual abandonment of steam-powered locomotives. The phasing out of steam traction in most European railways commenced in the 1950s and 1960s. At that time the requirement for steam locomotives decreased and many factories ceased to produce them. While, in the United States steam locomotives were phased out in the 1950s. In the period from 1946 to 1956 nearly 34 thousand vehicles were withdrawn from operation.



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