

= Trams in Rouen =

There have been two separate generations of trams in Rouen . The first generation tramway was a tram network built in Rouen , Normandy , northern France , that started service in 1877 , and finally closed in 1953 . There were no trams at all in Rouen between 1953 and 1994 , when the modern Rouen tramway opened .

Horse @-@ drawn carriages and omnibuses had started at the end of the 18th century and progressively improved , but were no longer enough to provide urban services in an age of industrial and demographic growth . Local officials therefore adopted the tramway as a new mode of transport . At first they were horse @-@ drawn , and later steam @-@ powered ; the tramway was electrified in 1896 .

The network spread quickly through various city @-@ centre districts on the right bank of the Seine , to reach the suburbs of the northern plateau , the hills of Bonsecours in the east , skirting around the textile valley of the River Cailly in the west , crossing the river and serving , in the south , the suburbs and industrial districts of the left bank .

At its largest it covered 70 kilometres ( 43 mi ) of route , the longest network in France during the Belle Époque , and contributed to the success of events in the town 's history , such as the Colonial Exhibition of 1896 and the Norman Millennium Festival of 1911 .

Although the 1920s saw a slight growth in traffic , the network 's expansion slowed to a halt . Private motoring had arrived to put an end to its monopoly . The rising power of buses and trolleybuses , the Great Depression in France , and above all the Second World War that ravaged Rouen and Normandy , condemned the tramway to death . The last trams stopped running in 1953 , after seventy @-@ six years of service . However , in 1994 , a new Rouen tramway came to the Norman capital .

= = The first tramways = =

= = = Horse and steam = = =

Rouen was integrated into the French Kingdom after Philip II of France annexed Normandy in 1204 , and it continued as one of the largest cities in the kingdom under the Ancien Régime . It prospered during the 19th century , with the traditional trades of textiles and Rouen manufactory ( faïence ) alongside the newer chemical and papermaking industries . The navigable Seine , emptying at Rouen , had been Parisians ' route to the sea ever since the Middle Ages . Napoleon Bonaparte said " Rouen , Le Havre forment une même ville dont la Seine est la grand @-@ rue " ( " Rouen and Le Havre form a single town of which the Seine is the High Street " ) . Rouen and Orléans were the first large cities to be connected by rail to Paris , on 3 May 1843 . After the Franco @-@ Prussian War of 1870 ? 1871 , the economy of the First Industrial Revolution under the Second Empire , and the ever @-@ growing population , obliged the Rouen city authorities to rethink the travel facilities both within the city centre and between it and the expanding suburbs .

Urban services ? always horse @-@ drawn , either carriages or omnibuses on the most profitable routes ? were not enough to satisfy the needs of a town that already numbered , with its suburbs , more than 170 @,@ 000 people . From 1873 to 1875 the city fathers commissioned a study into building railways connecting the most populous areas of Rouen . A decree was signed on 5 May 1876 , committing to a publicly owned standard gauge ( 1 @,@ 435 mm ( 4 ft 8 1 ? 2 in ) ) network , and to horse @-@ drawn carriages . Nine lines stretching 27 @,@ 500 m ( 90 @,@ 200 ft ) , or 1 @,@ 370 chains were decreed :

The town was authorised to tender construction and operation to one or more contractors . It quickly chose the only serious candidate , Gustav Palmer Harding , a British citizen . He was the continental representative of Merryweather & Sons , builders of steam tram engines . This decision knitted the close railway links between the city and Great Britain that remained for nearly half a century . Naturally , Mr Harding wanted to promote his company 's machines , so he long made his

views known to the municipal authorities . Finally convinced , they authorised him to use steam power from Maromme ( Line 1 ) , entering service on 29 December 1877 . Merryweather & Sons , whose depot was on the Avenue du Mont @-@ Riboudet , provided the tram units . Small and light ? 4 @.@ 7 tonnes ( 4 @.@ 6 long tons ; 5 @.@ 2 short tons ) ? these reversible locomotives had two coupled axles , fully covered by a wooden body . They looked the same as a normal carriage so as not to frighten the horses . These steam carriages had enclosed lower decks ; the upper decks were roofed but had open sides .

The first steam trams of Léon Francq 's design soon appeared on the Maromme line and coexisted with the horse @-@ drawn tramways that served the city centre .

= = = Success and doubts = = =

The successful first line was soon extended to the Place Saint @-@ Hilaire , opening on 1 June 1878 . Harding then founded the Compagnie des Tramways de Rouen ( " Rouen Tramways Company " ) ( CTR ) and started building new sections from the Town Hall to Mont @-@ Riboudet ( Line 8 ; opened 3 September 1878 ) . He also started steam traction from Darnétal ( Line 2 ; started 23 June 1879 ) . On the other hand , the lines that went through narrow local streets remained horse @-@ drawn when first opened : Line 4 ( opened 3 October 1878 ) , Line 5 , ( opening 12 December 1878 ) , Line 6 ( opened 6 February 1879 ) , and Line 3 ( opened 27 September 1879 ) . Line 9 was not constructed because of technical difficulties .

For more than six years , twenty @-@ three locomotives coexisted with horse @-@ drawn trams on the Rouen network . The speed and regularity of steam trams pleased passengers ( the speed limit was 16 km / h ( 9 @.@ 9 mph ) between Mont @-@ Riboudet and Maromme ) , but they were also expensive . The frequent stops let the boilers cool down , so coal consumption was high . Moreover , steam power angered both residents ? who accused them of being dirty and rough @-@ riding ? and coachmen ? whose animals were scared by the driver 's horn and the " infernal " noise of the trains . Operation thus was totally horse @-@ drawn from 1884 . The CTR thus found itself in charge of a " cavalry " of around 350 horses , stabled at Trianon and Maromme , the depot at Mont @-@ Riboudet having been disposed of .

= = = Electrification = = =

In 1895 the mediocrity of horse @-@ drawn service and the prospect of the great Colonial Exposition ( due to open in Rouen on 1 April 1896 ) made the town officials think of extension and electrification of the network . Councillors were sent on study trips both in France and abroad . One councillor even spent a year in the United States . At last , after much debate , the town accepted the CTR 's proposals . Electrification was contracted to the company of Thomson Houston , who built the " first network " , ten lines of standard gauge , either over new or re @-@ laid tracks :

= = Longest electric tramway in France = =

= = = Second network = = =

Infrastructure works and construction of the power station on the Rue Lemire were swiftly completed . The first electric locomotive entered service on 2 January 1896 , the electrified network going live fifteen days ahead of schedule ; the last horse @-@ drawn tram saw service on 19 July on the Sotteville line . After teething troubles , the new mode of transport had considerable success : in 1896 it transported over fifteen million passengers . The tram sheds , holding 50 vehicles , were expanded to accommodate 25 more during the first year of service . These were classic tramcars with two axles , powered by two 25 hp ( 19 kW ) motors ( one on each axle ) , and had room for 40 passengers . With its popular success , the network could be completed : the Line 10 extension to Saint @-@ Étienne @-@ du @-@ Rouvray was opened on 16 April 1899 , an 11th line was

constructed from Maromme to Notre @-@ Dame @-@ de @-@ Bondeville ( opened 17 December 1899 ) , and a 12th from the Church of Saint @-@ Sever to the Saint @-@ Maur sea wall ( 6 February 1908 ) . The Rouen tramways had 37 km ( 23 mi ) of lines , the largest electric network in France . Trams were up to three cars long and ran at 20 km / h ( 12 mph ) at 20 @-@ minute intervals .

The dynamism of public transport in Rouen was an inspiration to Baron Empain who , through the intermediary of his colleague Cauderay , proposed the creation of a second complementary network . He met numerous difficulties to which the CTR was no stranger , but on 17 July 1899 , a new company to be called Traction Électrique E. Cauderay ( a sister company of the better @-@ known Compagnie Générale de Traction ? CGT ? ) was granted the concession over five routes :

The first services started on Line 1 on 18 January 1900 , the other services starting on 10 May that year , but , facing competition from the CTR , the tramway from Petit @-@ Quevilly was curtailed , its terminus becoming Rue Léon @-@ Malétra .

= = = Towards monopoly = = =

The second network was far less efficient than the first ; In 1901 the trams transported only 1 @.@ 46 million passengers over 16 km ( 9 @.@ 9 mi ) of route , being 91 @,@ 000 per route kilometre ( 56 @,@ 500 per route mile ) . ( In 1908 , over 20 million people used public transport in Rouen , 19 million with the CTR , 1 @.@ 6 million with the CGT . ) In 1908 the CGT disposed of the second network to the Compagnie centrale de chemins de fer et de tramways because of administrative problems , a serious accident at Monumental on 6 November 1908 and a considerable deficit . This became an opportunity for the rival CRT , who in 1910 took over the CGT 's running rights and so were finally rid of competition .

The CTR was now master of all of the public transport in Rouen and its suburbs ( having also absorbed the tramway and funicular railway of Bonsecours on 25 September 1909 ) . It reorganised its service to be more integrated . It also expanded the service with later @-@ running trams , and extended Line 12 first to Champ de Courses ( opened 1 January 1910 ) then to Bois @-@ Guillaume ( opened 4 June 1911 ) and Mont @-@ Saint @-@ Aignan ( opened 15 March 1913 ) . This last section , running over the local authority 's rails , connected Grand @-@ Quevilly ( Rue de l ? Église ) and , on a branch , the district of Petit @-@ Quevilly ( opened 1 August 1915 ) . The network had grown to its largest , with 70 km ( 43 mi ) of routes ( including the tramway of Bonsecours ) .

= = = World War I = = =

World War I did not affect tram service in Rouen as much as it did elsewhere . After a short period of disruption during the great August 1914 mobilisation , the CTR maintained normal service during the four years of war . It overcame its reduced staffing levels with overtime , abolition of leave , and redeployment of depot personnel ; nearly all conductors were promoted to motormen , to their great satisfaction . At the end of 1916 , women ( aged 24 or over in 1916 , reduced to 23 or over in 1918 ) joined men on the trams , but , sexism at that time being the norm , the " wattwomen " ( female motormen ) were only allowed on the " easy " lines of Mont @-@ Saint @-@ Aignan , Bois @-@ Guillaume and Monumental , and were not allowed on steep gradients .

To satisfy military requirements , the network extended the Champ de Courses track to the Château du Madrillet , headquarters of an important BEF base . It also built a connection to transport the injured arriving by train at the Gare Saint @-@ Sever to the main hospitals of Rouen . These installations , constructed in record time , disappeared when the war ended .

= = Operational difficulties and closure = =

= = = Recovery and competition = = =

During World War I the track and rolling stock received little maintenance , and by the end of the war they were in a piteous state , while expenses had increased dramatically . The problem became a crisis after the serious fire at the Trianon depot on 30 November 1921 , which destroyed 70 of the 155 trams of the CTR . Successive fare rises provided a stopgap , but with the new convention of 29 December 1923 the company announced a reorganisation of the network . A competitor had also arrived : the bus . Trams had always attracted criticism over their limited capacity , slowness and discomfort , and their encumbrance to motor cars in the city centre . Another accident on the Monumental line on 5 October 1925 hastened the inevitable : the trams lost their first route .

= = = Fightback through innovation = = =

Against these setbacks , the CTR still had a record year in 1928 , with over 30 million journeys . But from 1929 , the buses took to the narrow streets in the city centre , as well as routes with low tram traffic such as Chartreux , Maromme and the circular . The tramways continued as going concerns , and started large programmes of renovation and modernisation in the dozen or so years before World War II . Between 1928 and 1932 , 75 first @-@ generation trams were rebuilt to allow one man operation .

The Rouen workshops presently devised two prototypes , of classical design , but with double folding doors at the front and safety devices ( compressed air on one of the prototypes , electrical on the other ) which became the basis for a series of 25 vehicles named " Nogentaises " . 25 new trailing cars completed the new rolling stock . In 1931 , a " revolutionary " pedal @-@ controlled locomotive was built equipped with disc brakes , but lack of funds meant no more came of it .

The 1930s also saw the arrival of the trolleybus , having the twin advantages of electrical traction and pneumatic tyres ; these newcomers supplanted the old trams on the Mont @-@ Saint @-@ Aignan line from Sotteville and Saint @-@ Etienne @-@ du @-@ Rouvray . In 1938 , the tram sheds were enlarged for the arrival of the " Parisiennes " , ten reversible trams bought from Paris .

= = = World War II and after = = =

World War II hit Rouen hard , including its transport network . In 1939 , before the war started , mobilisation and requisition had reduced the service frequency ; the German advance , in 1940 , blew up the city 's bridges ; on 9 June 1940 the Rouen Transporter Bridge was destroyed , which split the tram network in two until 1946 . With the German occupation , the lines were progressively reopened . But service was reduced . Difficulties became such during this period that the directors of the CTR had to improvise mobile workshops . The heavy bombing raids of Spring 1944 , in particular the destruction of the central part of the Rue Lemire , stopped the trams running .

Nazi occupation ended on 30 August 1944 and Liberation slowly healed the town 's wounds . It had been a catastrophe for the network : of the 76 trams in circulation in 1939 , 24 had been destroyed and 25 damaged ; track and overhead lines had been mutilated ; the Trianon depot had been bombed several times . Still , service was slowly restored , thanks to the staff 's hard work and above all passengers ' help in shunting trailing cars . In 1945 , 38 locomotives and 14 trailing cars were operational , but , despite restoration of service across the Seine on 20 April 1946 , the war had struck a fatal blow . Rouen was full of out @-@ of @-@ date equipment and so trams were progressively replaced by buses and trolleybuses .

In March 1950 the municipality decided definitely to close the tramway , but its actual closure came somewhat later . It was not until Saturday , 28 February 1953 that the last tram ran on the Champ de Courses line , 76 years after the network 's first service . But the Rouennaise did not forget the tram 's services rendered , organising a first @-@ class funeral : Just before the last scheduled run , a parade of honour made up of three trams ran from the Hôtel de ville to the Trianon depot , cheered by the crowds .

= = Bonsecours funicular railway and tramway = =

Bonsecours is a commune on a plateau to the southwest of Rouen . Until 1890 only an infrequent bus service linked it to Rouen . However , it attracted many hikers , with its splendid panoramas over the meandering Seine , and pilgrims visiting the shrine to the Virgin Mary .

== Early projects ==

A first railway project for the mountain , later known by the name tramways de granit , was presented in 1876 by Cordier ; it was one of the far @-@ flung ideas that the railway companies often had in the 19th century . Because classical rail has poor adherence , Cordier designed a raceway made of two granite rails embedded in concrete with a continuous guide rail between them . The 2 @, @ 200 m ( 110 @-@ chain ) line , with a terminus at the Quai de la Bourse , would be served by steam carriages with a capacity of only 30 places , but capable of running on public streets as well as its special track . Because of its technical complexity the line would have been hugely expensive , the 1 : 1 gradient to Bonsecours requiring no fewer than 30 viaducts spanning overall 250 m ( 270 yd ) . The project was soon abandoned .

== Construction ==

In 1892 Bonsecours was finally connected to the " world below " when two Swiss engineers , Ludwig and Schopfer , built a funicular railway with water @-@ filled counterweights . On 8 June 1892 it was formally declared open to the public and first ran eleven days later on 19 June . This mountain railway , 400 m ( 20 chains ) long and rising 132 m ( 433 ft ) , ran from the banks of the River Seine to the esplanade of the basilica . Each car could hold 90 people ( 50 seated ) , and its water tank could be filled in five minutes . There were twelve journeys each way daily , more on busier days . But the ferry service from its terminus at Epaulet to Rouen was irregular , and by the end of the century it had a dangerous rival : the tramway .

At first , in 1899 , the tramway was designed to be steam powered , but by 1895 this had changed to electromotive power . The line was built by the Compagnie du Tramway de Bonsecours ( CTB ) , and first ran on 21 May 1899 . It was 5 @, @ 600 m ( 280 chains ) between the two termini ( the Pont Corneille and the crossroads of the RN 14 and the Belbeuf roads ) , with timetabling of up to 7 trams . The trams had greater power than their Rouen counterparts , with 38 hp ( 28 kW ) motors . They could climb steep gradients ( up to 9 : 100 ) and could accommodate 48 passengers , with 42 more in a trailing car .

== New ownership and closure ==

Seventy @-@ two daily journeys each way brought the tramway success , and it transported nearly 700 @, @ 000 passengers in 1901 , compared to 140 @, @ 000 for the funicular , which was clearly in a dire state financially ( 210 @, @ 000 passengers in 1898 ) . The figures were so catastrophic that on 25 November 1905 the CTB sacked the management of the mountain railway , and liquidated the defunct Chemin Funiculaire d ? intérêt local de Rouen @-@ Epaulet au plateau de Bonsecours . Operations continued , and the CTR took over both tracks on 25 December 1909 . Although the tramway was always well used ( 900 @, @ 000 tickets sold in 1913 ) , the clientele of the funicular continued to fall ( 30 @, @ 000 tickets collected the same year ) , and some daily receipts were less than 1 franc . Lacking passengers , the funicular closed on 25 May 1915 , and the tramway became the monopoly service for Bonsecours . This date should not be confused with that for the Rouen service , which continued until February 1953 .

== Trianon tramway ==

== Left bank ==

At the start of the 20th century the suburbs of the left bank were the quickest growing areas of Rouen , in particular the communes of Sotteville ( a large railway town ) and Grand @-@ Quevilly , but these towns did not have good enough public transport . Although the CTR had constructed some lines , they did not well serve residents wishing for rapid transit between the suburbs and the city centre . Line 4 of the CTR , with its central terminus at Place Beauvoisine , ran only as far as the Trianon roundabout at the edge of the Jardin des Plantes . A southern extension was planned to the Bruyères roundabout , a meeting @-@ point of several roads to the new districts , and to the racecourse where major horse racing events took place each Thursday . But it was always delayed .

In 1903 a Sotteville man , M. Hulin , the owner and proprietor of the Château des Bruyères , grew tired of these delays and asked for the concession for a 600 mm ( 1 ft 11 5 ? 8 in ) narrow gauge horse @-@ drawn tramway , which would connect the Trianon roundabout to the racecourse via the Elbeuf road , being 2 @, @ 000 m ( 99 chains ) long . Two years passed in discussing the project 's profitability ( profit for both Hulin and M. Dagan , the engineer from the Corps of Bridges and Roads ) and for tendering the construction of the line to a contractor other than the CTR . This time for reflection led to abandoning horse @-@ drawn trams in favour of mechanical traction , and moving the terminus from the racecourse entrance to the vast cemetery that the authorities intended to build , close to a shooting range . The CTR did not oppose the line , which would not compete with their own , so it was made a Public Local Railway on 10 March 1905 .

= = = Small train in town = = =

The line was put into service on 1 April 1906 , well before the official opening date of 28 April . This short 2 @, @ 200 m ( 110 @-@ chain ) route , opened solely for passenger traffic , traced a rectangle between the Trianon roundabout and the racecourse , the 600 mm ( 1 ft 11 5 ? 8 in ) narrow gauge rails being established beside the Rue d ? Elbeuf between the trees lining the road and the fences separating adjacent land ( much of which was owned by Hulin ) . Service was provided by two 24 hp ( 18 kW ) diesel @-@ electric locomotives , built by the Turgan workshops , each with room for 16 people , and the fuel depot was sited near to the racecourse . The service was particularly frequent : thirty journeys each way per day . The entire line took 10 minutes to traverse at a maximum speed of 25 km / h ( 16 mph ) .

The first months ' service did not meet Hulin 's expectations ; passenger numbers were much lower than expected , the coefficient of use was catastrophic : 0 @. @ 39 . In 1906 a law was passed instituting a weekly day of rest , so it was decided , from 12 January 1907 , to extend the line 800 m ( 40 chains ) to the Madrillet roundabout at the edge of the Rouvray Forest , which was popular for Sunday walks . This 3 @, @ 000 m ( 150 @-@ chain ) double @-@ track extension was inaugurated on 27 August 1907 . The same year , diesel @-@ electric locomotives ( whose " terrible noise " frightened the horses , to the chagrin of their owners ) were replaced by electromotive traction . Two Orenstein & Koppel 0 @-@ 4 @-@ 0T steam locomotives headed two open carriages each taking 16 passengers . Their chimneys were fitted with spark arresters to prevent forest fires around Rouvray .

= = = Brief life = = =

The line was never profitable : the coefficient of use fell to 0 @. @ 32 in 1907 and passenger numbers fell to 34 @, @ 000 from the 60 @, @ 000 previously . Except on Thursdays , horse racing day , and Sundays where the tramway took amorous walkers to the forest paths , the trams went with few passengers , often with none . What is more , the high number of return journeys reduced the possibility of making connections in Rouen : passengers on the small line may have had to wait a long time at the Trianon roundabout for a connection to the city centre . The situation so preoccupied the Compagnie du Tramway de Rouen @-@ Trianon that in January 1908 it replaced Hulin , always the driving force , and asked the Conseil Général to authorise a reduction in service

frequency . But it also proposed to use four @-@ car trams instead of two @-@ car trams on busy days . Although the departmental authorities accepted the extra cars , they would only allow the reduction of service with much red tape , as can be seen from this extract from the report of Soulier , the Conseiller général of Rouen :

It is well understood that , at the moment it is only a minimum , the Society is always free to put in place the number of trains necessary to transport passengers who present themselves , that if it will satisfy this requirement , its proper interest is guaranteed , and , in giving greater public satisfaction , its infrastructure will be wisely used , instead of it travelling empty for part of the day to the detriment of its business . Being given the lower frequency of service on weekdays and Saturdays , except Thursdays ( racing ) , we can perfectly accept the reduction to ten trips to those going from the racecourse to the forest , but , concerning the part of the journey from Trianon to the racecourse , it is imperative that the Chief Engineer ( Lechelas ) keeps the minimum to 30 , otherwise there will be a kind of abandonment of the line , because for this small distance , it will not be possible to get reasonable traffic with more frequent departures .

The service modifications lowered operating expenses , but the coefficient of use went down dramatically : 0 @.@ 33 for the first ten months of 1908 . The decision to axe the line was made on 1 November 1908 . Two strategic errors had been made : wanting a service independent of the CTR 's network , and putting its terminus out of town . The railway was officially disbanded by a decree of 14 September 1911 , the rails were lifted , the public highway restored ; no trace of the tramway remains .

= = Modern tramway = =

In 1953 one of the largest electric tramways in France disappeared . But in the 1980s Rouen ? and other large cities such as Nantes and Grenoble ? decided that increasing traffic jams and the desire to diversify public transport needed a new mode of public transport . Discussions started in 1982 under the guidance of SIVOM ( Syndicat intercommunal à vocations multiples , " Intercommune syndicate of several trades " ) , grouping together the communes of Greater Rouen ( representing nearly 400 @,@ 000 inhabitants ) .

In 1986 , CETE ( Centre d ? étude technique et de l ? équipement , " Technical and construction study centre " ) put forward a report supporting construction of a modern tramway . A pre @-@ project was launched in September 1987 and led to the Declaration of Public Utility on 22 April 1991 . Construction work was undertaken by GEC @-@ Alsthom and on 17 December 1994 the first line of the modern Rouen tramway was inaugurated .