THE TRAIN IN GIPUZKOA

To Francisco Perez and Guillermo and Miguel Gonzalez, veteran and expert engine drivers of the real trains: steam engines. Also to Pedro Perez Amuchastegui, a stoker of the highest degree.

The train and the revolution of transport

The concept of distance of any Gipuzkoan citizen at this end of 20th century is radically different from the way it was only two centuries ago. Today it is completely normal for the students from the Journalism Faculty to travel to Leioa every day from any part of our province. Nobody is surprised when an executive takes an early morning plane from Hondarribia, attends a work meeting in Madrid or Barcelona and comes home that same evening. We think it is the most natural thing in the world to cover the 900 kms separating Paris from Irún in just over five hours on High-Speed trains. In short, on acquiring our home, we often find that the distance from the house to our place of work or the educational centres attended by our children is not the aspect which most conditions our choice. That's what cars, buses, trains, motorbikes and bikes are for!

However, the panorama was exactly the opposite only two centuries ago. A journey from Donostia to Bilbao could mean more than three days on foot. Of course it was impossible to go further than from Donostia to Renteria in a day, while no-one even considered living further than two kilometres away from the place where they carried out their main everyday activities. The world of two hundred years ago was extremely closed and, in fact, very few people ever left the land on which they were born.

The world of our great-great-grandparents didn't include much more than their farmhouse, their church and the surrounding mountains. Today however, thanks to the revolution of transport, nobody is surprised when a couple goes round the world on its honeymoon. It is only a question of money, since everything we need to make the journey is within our reach.

But means of transport in 1795 were very different from present-day versions.

The most common means of overland transport were our own two legs. The maximum distance that could be covered in a day was some 40 or 50 kilometres.

Horse, mule or ox-drawn vehicles could go somewhat further. A stagecoach could cover more than 100 Km. in a day, always depending on the state of the poor roads of the time. A simple downpour could make the best road into an impassible quagmire. On the other hand, the capacity of transport was limited since animal haulage didn't have the strength to pull heavy loads. By way of a solution to this inconvenience, tracks were lain in some parts of England, over which carts could roll more easily. This was the origin of the first railways which, normally used around mining exploitations, covered extremely short distances.

Sea and river transport, when the latter was possible, were more active. Wind-blown ships could transport loads of up to 500 or 1,000 tons, meaning that their capacity made up for their slowness.

The development of transport was therefore hindered by the limited capacity of the energies known until then, the strength of animals and the wind.

In 1782, James Watt built the first steam engine, which was soon put to use pumping water out of the mines and later as the driving force of the incipient industrialisation in Great Britain.

The capacity of this new source of energy was extraordinary and several attempts were made to apply the strength of steam to transport.

The main inconveniences of the steam engine were its enormous size, with respect to boilers, engines, distributions, etc., and the huge amount of water and fuel required. This is why it first found its simplest use in navigation. Steam-produced energy meant that ships, which had the space to house all the necessary machinery and accessories, became faster and could take on greater loads, also gaining in safety, since the strength of the steam engine meant that the ship could be controlled in bad weather, while strong northwesterly winds all too often blew them onto the coast.

Efforts were also made to apply the steam engine to road transport, but the excessively heavy equipment caused the failure of all attempts. The spectacular steam cars, barely autonomous, sunk relentlessly into the appalling road surfaces of the time.

After the failure of the first steam cars, it was understood that the only way of putting Watt's engine to use on land transport was by means of the railway, since its tracks were able to withstand the weight of the engines. On the other hand, the limited friction of the wheels against the metal tracks meant an important increase in the output of steam engines.

Richard Trevithick launched the first experimental steam engine in 1804, but it wasn't until 1830 that the first railway, built by Robert Stephenson, was opened between Liverpool and Manchester, the first in the world to be moved by steam engines.

Thanks to the success of this railway, new lines were soon built in England itself and later all over Europe and America. A dense network of railways was therefore established and, in a few years, joined places to one another which had until then seemed extremely far away from one another. Nothing would ever be the same again. The barriers imposed by distances that had been insurmountable, had been broken.

Table nº 1

Dates when the first European railways were opened.

England: Liverpool to Manchester, 15th September 1830
Belgium: Brussels to Malines, 5th May 1835
Germany: Nuremberg to Furth, 7th December 1835
France: Paris to Versailles, 24th August 1837
Russia: Saint Petersburg to Pavlosk, 30th October 1837
Austria: Florisdorf to Wagram, 17th November 1837
Holland: Amsterdam to Haarlem, 20th September 1839
Italy: Naples to Portici, 4th October 1839
Switzerland: Zurich to Basel, 9th August 1847
Spain: Barcelona to Mataró, 28th October 1848
The Basque Country: Dax to Baiona, 26th March 1855
Sweden: Goteberg to Joosered, 1st December 1856
Portugal: Lisbon to Carregado, 28th October 1856
Gipuzkoa: Beasain to Donostia, 1st September 1863

The train in Gipuzkoa

As is obvious from the previous table, the railway appeared in Gipuzkoa somewhat later than it did in other parts of Europe.

The first railway service in the province was established on 1st September 1863, thirty-three years after the Liverpool-Manchester railway was opened and fifteen years after the Barcelona-Mataró line.

The first Carlist War, the political instability experienced during a large part of last century, and the lack of capital in Gipuzkoa, where the industrial revolution had not yet started, were some of the reasons for this delay. The difficult orography of our territory was an additional obstacle to the construction of railways on Gipuzkoan ground.

Nevertheless, this initial delay was soon compensated by the rapid development of new lines which eventually covered almost all of the province, in spite of the fact that the difficult Gipuzkoan orography wasn't exactly ideal for laying railway tracks. This is due to the fact that one of the great advantages of the railway in comparison to other means of transport, the scarce friction between the wheel and the steel track, turns into a disadvantage on climbing a hill, due to poor adherence. This is why railways cannot normally climb hills with a slope of more than 2%. Greater inclines mean that, instead of climbing, the train will simply slip.

In order to overcome the obstacles of nature, it was necessary to build large bridges and bore long tunnels, the most outstanding of which is that of Oazurza, between Brinkola and Zegama. This tunnel, with its 2,957 m. in length is still the longest in Gipuzkoa, in spite of the 130 years that have passed since it was made.

The conclusion of the Urola railway line in 1926 completed Gipuzkoa's railway map. More than 386 km. had been built in a little over sixty years, quite an impressive figure in a territory as small as ours. In fact, Gipuzkoa even came to have the densest railway network in the Spanish State, and its magnitude was comparable to the most highly developed European countries, such as Great Britain and Belgium.

Each Gipuzkoan valley had its own railway. The line running from Irún to Elizondo therefore ran through the Bidassoa valley. The Oiartzun valley was covered by the mining tracks of Arditurri and Artikutza, while the area closest to the estuary was covered by the *Topo* (suburban train) and the Northern railway. The Urumea was also covered by the Northern railway, a line which later served the middle banks of the Oria and head of the Urola rivers. The Plazaola line, on the other hand, never left the banks of the Leizarán river.

The lower basins of the Oria, Urola and Deva rivers were serviced by the nearby *Ferrocarriles Vascongados* (Basque Railways) lines, while the Urola line constantly changed from bank to bank, playing with the river that gave it its name. Lastly, the *Vasco-Navarro* Railway ran through Upper Deva.

Railways and valleys vertebrated the province, providing it with a truly enviable communications system, complemented by a dense network of city and intercity electric tramways that contributed to favouring the economic and social development of Gipuzkoa.

Most of these railways were constructed by private companies. It was initially capital of French origin which promoted the construction of the first railway in the province, but Gipuzkoan and Biscayan capitals soon took over.

Gipuzkoa County Council also actively participated in developing the province's railway network, granting important subsidies and even subscribing to shares in the several railway companies being constituted.

But the Council's role wasn't limited to backing private initiative. When lack of investment in the *Vasco-Navarro* and Urola lines threatened to incommunicate the areas they served, the County Council reacted swiftly, backing the state by means of lending it money against its allocation, in order to build the former line, so that it could then construct, and later exploit the latter itself. This, along with the Triano railway in Biscay, is the only case in the state where the County Council built and exploited a railway by itself.

Table nº 2

The development of European railway networks and their comparison with Gipuzkoan railways in 1926.

	Km. /Railway	Surface	Population	Mts. Rail./ Km	Mts. Rail./ Inhabitant
Germany	63,760	540.500	64,926,000	118	0.98
Belgium	8,814	29,500	7,426,000	291	1.18
France	65,290	536,400	39,192,000	129	1.66
Great Britain	37,717	316,600	45,360,000	119	0.83
Italy	17,634	286,600	34,670,000	62	0.50
Switzerland	4,873	41,400	3,753,000	117	1.28
Spain	15,840	497,225	19,506,000	32	0.81
Gipuzkoa	353	1,800	274,000	196	1.28

Note the high density of railways in the Spanish state, both with respect to Km² of territory as well as to the number of inhabitants, which contrasts strongly with Gipuzkoa, only surpassed in Europe by Belgium in the first concept while in the second only France offers a higher value.

Standard-Gauge lines; from the Northen railway to RENFE

The province of Gipuzkoa, the shortest route from the centre of the Iberian peninsula to the European continent offers, on the Bidassoa border, the simplest of natural passages around the colossal barrier of the Pyrenean mountain range.

This privileged geographical situation, together with the presence of excellent ports along the coast, has, since the Middle Ages, favoured the introduction and improvement of communications in this area. It is not therefore surprising that one of the first long-distance railway projects in the Spanish state precisely affected our province.

In 1845, three years prior to the opening of the first state railway between Barcelona and Mataró, Queen Isabel II granted the ruling bodies of Biscay the concession to study, construct and exploit an "iron way" which would link the capital of the Kingdom tohe Bidassoa border, passing through Bilbao.

Although our neighbours hired a reputed English engineer, Alexander Ross, one of the pioneers in his country with respect to the construction of railways, the financial cost of the project, together with the political instability of the moment, prevented the carrying out of such an ambitious project.

Ten years later, the first General Railway Law was proclaimed, normalising all the aspects related to railways, including state subsidies and other privileges.

The new legislative framework gave a final thrust to the construction of railways in the Spanish state, attracting capital, mainly foreign, to this kind of endeavour. This is how construction was started on what are still the main RENFE (the Spanish national railway company) lines.

One of the main lines which should have been built was that which would have linked the capital of the state to the French border, a line which soon attracted the interest of several companies. Finally, in 1856, the Spanish company, *Crédito Mobiliario*, with mainly French capital, obtained the concession. However, this company only established the route to be followed between Madrid and an indefinite point on the Ebro

river, without stipulating how this route was to continue from there to the border.

The people of Biscay therefore made the proposal of following the route studied by Alexander Ross, which ran to Bilbao and continued along the coast to Irún. The inhabitants of La Rioja, however, spoke up in defense of a route through Belorado and Haro to Vitoria and from there to the border, while the people of Navarre proposed a line to Pamplona and from there to the border through the Pyrenean pass of los Alduides.

Gipuzkoa County Council saw the importance of the future railway for the development of its economy and vertebration of the province. For this reason, with the backing of the Alavese institutions, it drew up its own alternative, a railway which, starting from Miranda, would run over the Alavese Plain and enter Gipuzkoa in the area around Etxegarate. This proposed railway was to pass through Zumárraga, Beasain, Tolosa and Donostia, from where it would continue on to the Irún border.

Invitation

The greatly awaited moment has arrived when the negotiations of this Province with the *Crédito Mobiliario* have come to an end with the signing of the contract to start work on the Northern Railway, and its operation as far as Villafranca, over a period of four years.

This is a serious occasion: it is a question of life or death for the country. The railway will mean greater prosperity since, without its help, the country would have no future, and would run into inevitable ruin. Everybody is aware of the fact that other ports are going quickly ahead to obtain this advantage, and that it is essential to follow suit, or resign ourselves to losing everything.

But this undertaking, the greatest necessity of the period, requires everyone to make an effort. Forty-four years ago we were in a state of collapse, but nevertheless, our children, amid the misery and orphanage surrounding them, have built the ruins up into a new city. Perseverance and confidence have achieved this complete triumph in a short time. That requested of you for the railway is not as much, nor equal to the circumstances of the contributors, to whose patriotism we appeal. Can you do less than that which was done in 1813? Such half-heartedness would be disastrous.

The undertaking contracted by the Province comes to twenty-five million reals. This is a perfectly guaranteed advance, which will increase by six percent in interest each year. We will accept any subscription of 2,000 reals and over, a sum which must be paid in ten installments over a period of 4 years, and on which interest will be returned with each installment, starting from the moment when it is presented to the *Crédito mobiliario*. How many people are there in this City, whom, by themselves alone, or together with others, can provide this said service!

The Province appeals to its children, to those who have settled in Gipuzkoa, and to those who care for this country; whose grandiose intentions will be strongly and ardently backed by the City. The corporations, on opening the subscription for which they are responsible, hope that those it administers will make a show of love to honour them and the interests of their people.

The Province has set an example by subscribing the sum of four million reals; as has the Town Council with the sum of three hundred thousand reals.

Nobody should be discouraged by the fact that their donation is smaller than that of somebody else; they all have their merit. Make your contribution to the common patrimony, which is the only way to avoid the catastrophe with which we are otherwise threatened.

Let us rush to answer the voice of the Province that wants to lead us along the path of improvement, don't let us waste this precious moment to do the greatest of goods. Nothing is more honourable than the good and pleasant memory of those who will come after us: oversight will mean failure. Don't let us fall into this disgrace, precisely when the future existence of our country depends on us. Our indifference today would sink it forever.

Please find attached the Provincial circular showing the contract. The Corporations invite you to fill in the accompanying certificate with the amount being subscribed and deliver it to the Secretary of the Town Council before the 20th of this month.

San Sebastian, 7th January, 1858.

President, Vice-President
The Town Council, The Commercial Board
Angel Gil de Alcain, Bernardo de Alcain

Conscious of the fact that Gipuzkoa's future largely depended on the route finally chosen by the Northern Railway Company, the County Council commissioned Fermín Lasala and Luís de Mariategui to carry out negotiations in Paris with the Spanish *Crédito Mobiliario*. These negotiations can't have been easy, but our institutions finally got what they wanted, even although the price was a subsidy of 25 million reals.

In order to raise the necessary capital, the County Council opened a general fund which was greatly contributed to by locals from the province who had emigrated to Cuba. In spite of the distance, many Gipuzkoans still followed events at home in their native land.

In the midst of great cheer, work was simultaneously started on the first Gipuzkoan railway in Donostia and Tolosa on 22nd June 1858. Meanwhile, the *Crédito Mobiliario* had transferred the concession to its subsidiary company, *Caminos de Hierro del Norte de España* (the Northern Railway Company). The new concessionary put M. Letorneur in charge of the work, giving him the title of head engineer.

The work went ahead with virtually no setbacks on the Alavese plain, and the first train started running between Miranda de Ebro and Olazagutía on 15th April 1862. In Gipuzkoa, however, small local contractors had serious problems with the several tunnels and bridges along the way. In fact, although the first trains ran between Beasain and Donostia on 1st September 1863, and the stretch between Donostia and Irún started running on the 18th of October, the line between Olazagutía and Beasain advanced extremely slowly, even coming to a standstill in some parts.

Afraid that it might be impossible to finish the line, the Northern Railway Company decided not to continue working with local companies and turned to the French company Gouin et Cie., also a subsidiary of the *Crédito Mobiliario*, which was equipped with the necessary material and human means.

This company had recently finished building a transalpine railway in the Italian Piamonte area, meaning that it had enough experience to deal with our mountains. The work brought to the Gohierri area of Gipuzkoa more than a thousand workers from Piamonte, who were well worn in with respect to the hard work of boring tunnels through the entrails of the earth. These workers brought new customs to the heart of Gipuzkoa, many of which took deep root in the emotions of our people. We refer, among others, to the Trikitixa or the sport of two-handed log cutting. When the work was finished, many of these men from Piamonte stayed on in Gipuzkoa, and surnames with obvious Italian origins can still be found in the Gohierri area. Many others left with the company for other

important public works, and with them more than one girl from the same area. It is not therefore surprising that the accountant for the Suez canal was a native of Tolosa.

Man eventually managed to overcome the natural obstacles in the way of the train. More than 14,224 m. of tunnels had to be bored, meaning more than 15% of the length of the line. Spectacular bridges also had to be built, such as that of Ormaiztegi, with its 289 m. in length and 34 m. in height. These bridges have given a personal aspect to a landscape and people which now feels closely identified with its viaduct.

An extremely solemn ceremony was held on the quays of Donostia station on 14th August 1864, in order to celebrate the final opening of the Northern Railway. These acts, presided over by the King Consort, Francisco de Asis, were accompanied by traditional festivities and fireworks. Joy was widespread in Gipuzkoa. After years of struggle, the railway had become a reality. The King continued on his way to Paris the next day, leaving the province with an essential element which allowed the development of its incipient industry and the start of the expansion of the Port of Pasajes.

With time, the Northern Railway company was to improve its initial installations. Irún station was made much larger, while the quays in Donostia station were covered with a roof produced by the workshops of Gustav Eiffel. The primitive iron tracks were replaced for the first time in 1884 by new, much more resistant steel tracks.

Sudexpress, the King of European trains, passed through in 1887 on its way from Paris to Madrid and Lisbon. The new century saw the installation of the double-track, an indispensable change, given the widespread increase of railway traffic.

However, the most important work to have been undertaken by the Northern Railway Company was the electrification of the line in 1929. This meant not only the elimination of annoying train smoke, but even more importantly, an improvement in the speed of the train on the steep ramps of the climb up towards Alsasua. It also permitted the creation of an intensive suburban service which strongly favoured the urban development of the villages along the line.

The Northern Railway Company continued lending its valuable services to Gipuzkoa until it was nationalised after the Civil War. As from 2nd February 1941, RENFE took hold of the reins. In its 77 years of activity, this service has brought important benefits to the province, becoming the real spinal column of the territory. One look at the map proves that the areas of thickest urban and industrial development lie along this railway line, meaning that we can confidently confirm that the investment made by the County Council in 1858 was an excellent decision.

Narrow-gauge trains

The first railways built in Great Britain by Stephenson used used a track width of 1.44 m., the origin of which goes back to the wheel separation standardised by the Roman Empire two thousand years previously.

The width defined by Stephenson has been considered as normal since then, but, for different technical and economical reasons, a series of railways were later built with different track widths. This means that, while most of the European continent adopted the measurement of 1.44 m., other countries decided to use wider tracks, generically known as "standard-gauge". In Russia the first railways were built with a width of 1.55 m., while Ireland adopted a width of 1.60 m. Spain, and Portugal, obliged to do so by the former, decided on a width of 1.67 m., that is, six Castilian feet.

There have also been several cases of smaller track widths, mainly with an end to making the work as cheap as possible, since the smaller the width between tracks, the smaller the required level area, tunnels, bridges, etc.

Railways in Gipuzkoa have widely ranging widths. The wide Northern Railway (1.67 m.), that of the French Railways, which, with their standard-gauge, come as far as the Ventas part of Irún, the Artikutza mining railway, with its extremely narrow-gauge of only 60 cm., those of Arditurri and Mutiloa, with only 75 cm., the line running from Irún to Endarlaza, with 0.92 m. (the very British measurement of three feet) and especially several railways with a width of one metre, known as "metre-gauge railways", which are the ones we are going to talk about in this chapter.

The origin of the first metre-gauge railway in Gipuzkoa is closely linked to the route finally chosen by the Northern Railway Company for its line.

The chosen option cut Bilbao completely off from the interior, meaning that the ruling bodies of Biscay promoted the construction of their own railway between Bilbao and Tudela, meeting the Northern Railway line in Miranda de Ebro.

Work on the new railway went swiftly and it was opened in 1863, a year before the Northern Railway line was finished.

But the work cost three times the initial estimate, meaning that, in spite of the excellent traffic prospects, the line went bankrupt, finally being absorbed by the Northern Railway Company in 1878. The crisis suffered by the line running from Bilbao to Tudela meant bankruptcy for many small investors who had invested their savings in shares in the company.

The negative experience of the first Biscayan railway kept capital away from new railway adventures until, in 1882, a group of businessmen, known in local financial circles as the "madmen from *Duranguillo*", built a metre-gauge railway between Bilbao and Durango.

Quite the opposite to its predecessor, the *Duranguillo* was an enormous financial success, due to which the erroneous idea that only narrow-gauge lines could offer good dividends spread quickly. A study was therefore soon carried out to extend this line towards Zumárraga, with a view to making communication easier with Donostia and the French border, changing to Northern Railway trains in Donostia station. Authorised voices such as that of the famous engineer, Pablo de Alzola, warned against the grave error of building such an important line in a width smaller than normal, but his clever reasoning fell on deaf ears, drowned out by the more flattering sound of easy profits.

Construction of the railway from Durango to Zumárraga was slow and not without difficulty. The first train drew into Bergara on 1st June 1888, and the first metre-gauge railway in Gipuzkoa was opened on 26th August 1889, a line which also had a branch linking Málzaga to the important blast furnaces of San Pedro de Carquízano, in Elgoibar.

In spite of the important reduction brought about by this railway with respect to communication between Bilbao and the border, the change of trains in Zumárraga made the journey much longer, meaning that the possibility of extending the metre-gauge line to Donostia was soon considered.

The *Elgoibar a San Sebastian* Railway Company was created in 1891 and, the first stretch from Elgoibar (more precisely from Carquízano), to Deba was opened two years later, on 3rd August 1893. The stretch from Zarautz to Donostia saw the first train pass on 9th April 1895, but the delicate financial situation of the undertaking and difficulties presented by the passes of Itziar and Meagas, delayed the opening of the whole length of the line, which didn't take place until 1st January 1901.

In 1906, the companies *Central de Vizkaya, de Durango a Zumarraga* and *de Elgoibar a San Sebastian* merged to become the *Compañía de los Ferrocarriles Vascongados*, which electrified its lines in 1929.

With the change of century, new business initiatives wove a thick network of metre-gauge railways throughout Gipuzkoa. The border railway line, linking Donostia to Hendaye, was

opened in 1912. This train is commonly known as the *Topo* ("Mole"), due to the amount of tunnels on its route (20% of the total line). Its promotors thought, correctly, that the smoke of the trains could become intolerable inside the tunnels, and therefore decided to use electric traction right from the beginning, using equipment similar to that of the tramways.

On 20th January 1914, the new Plazaola train service started running from Pamplona to Lasarte, where it met the *Ferrocarriles Vascongados*. The origin of this line lies in a modest mining railway which ran between the Plazaola mines and Andoain station, where mineral was transferred to trains belonging to the Northern Railway Company. It was later extended from both ends, creating a direct line between the capital of the old kingdom and Donostia, but its life was short-lived. Competition from the road and the terrible floods of 1953 caused its closure and dismantling.

The origin of the Bidassoa train is very similar. Its immediate predecessor was a modest mining railway which ran between the mines of Endarlaza and Irún. The width of its gauge (0.92 m.), was increased to metre-gauge when the decision was taken to extend it to Elizondo, a stretch which was opened on 28th May 1916. Although a study was carried out to continue this line to Pamplona, competition from the road again meant that the line was closed on 31st December 1956.

The origins of the line running from Bergara to Vitoria-Gasteiz date from 1887, when *The Anglo-Vasco-Navarro Railway* was founded, with a view to linking Estella with Durango via the Alavese capital. In spite of initial British financial backing, the company only managed to inaugurate the first stretch between Vitoria and Salinas de Léniz. After bankruptcy, the state confiscated the undertaking, although it didn't continue construction work until it had received definite backing from the three affected County Councils, which, by means of borrowing money against their allocations, financed all the work.

On 3rd September 1918, a railway service started running between Vitoria and the Bergara suburb of Mekolalde, where the change was made to the *Ferrocarriles Vascongados de Durango a Zumárraga* line. A branch line establishing a connection between San Prudencio and Oñate was opened on 30th September 1923.. This line was completely electrified in 1938.

Although the *Vasco-Navarro* railway line always had excellent mobile material and even better installations, and in spite of the undeniable service it provided, a decision taken in some Ministry of Transport office in Madrid condemned it to immediate closure on 31st December 1967.

During the early seventies, the panorama of narrow-gauge railways in Gipuzkoa was devastating. Competition from the roads, and the decisive backing of the administration to this means of transport, in detriment to the railway, which wasn't even allowed to increase the price of its tickets in order to keep their costs even, meant the disappearance of most of the lines, and only the *Vascongados* and *Topo* services barely survived. Finally, in 1973, their services had to be suspended as they were unable to meet the increasing losses, after which they were rescued by *FEVE*, a public state company known as the "narrow-gauge RENFE".

FEVE simply maintained the existing services, without making immediate improvements to the line. In 1974 it definitively closed the branch line running from Málzaga to Zumárraga. Shortly afterwards, however, a slow tendency towards change became noticeable, a period during which both lines were modernised, starting with the *Topo* and later the older *Vascongados*.

In 1979, the Gipuzkoan metre-gauge lines in the hands of *FEVE* were transferred to the recently created Basque General Council. For its part, 1982 saw the creation of the public company dependent on the Basque Government, *Euskotrenbideak*, which took over the operation of metre-gauge lines in Gipuzkoa.

Today, the metre-gauge lines operated by *Euskotrenbideak* are the only witnesses to the extensive narrow-gauge railway network of yesteryear in Gipuzkoa. But this is a testimony full of life and future, after the important improvements recently made both to moving material and installations. Every day the *Topo* transports more people, who can reach the centre of Donostia in only a few minutes, thereby avoiding traffic jams and parking problems. The line running along the coast is also gradually recovering protagonism, both with respect to the suburbs of the capital as well as to the important local train service in the area around Eibar.

The Urola railway

In the previous chapter we made no mention of one of the most unusual metre-gauge lines in the territory of Gipuzkoa, the Urola train. The omission was deliberate, since this railway has a series of factors which differentiate it from the others, meaning that it deserves a chapter of its own.

Unlike the other railways in the province, and in the rest of the state, the Urola railway takes its origin from public initiative. Moreover, it was the last railway to be built in the province, and also the last to be closed. Its meticulously chosen route, engineering works or the splendid architecture of its stations also make it worthy of a closer look.

The first project for a railway between Zumárraga and Zumaia was drawn up in 1887 by the famous engineer Pablo de Alzola on order by the town councils of the Urola valley. Given the strictly local nature of this line, it was Alzola himself who recommended that it be built with a metre-gauge track, in spite of the fact that he was well known, as we saw in the previous chapter, for his role as the main advocate of standard-gauge lines.

The projected railway hugged the difficult terrain of the Urola valley as closely as possible, and proposed bends of up to 60 metres in radius, similar to the line running from Durango to Zumárraga, a stretch which later caused the *Vascongados* company enormous problems due to its extreme harshness.

In spite of the fact that the project was cheap, the small population of the valley and its limited industrialisation didn't seem sufficient to guarantee the survival of a railway, and it therefore failed to attract capital.

In order to break the isolation into which the Urola valley was sinking at the beginning of this century, a request was made for an electric train from Azkoitia to Zumaia, but this was yet another project which never came to be.

In 1908, the Secondary and Strategical Railway Law came into existence, with a guarantee of interest on invested capital and interesting subsidies, a plan which included the railway from Zumárraga to Zumaia.

In 1910 the *Vascongados* Railway Company entrusted the engineer Manuel Alonso Zabala (who had participated in work on the *Topo* and Plazaola lines), with the drawing up of a new project, more gentle than that studied by Alzola.

After approval of the project in 1915, an invitation to tender was issued to grant its concession, but the lack of capital meant that no tenders were presented, not even by the *Vascongados* company, which had shown great interest until then.

The Gipuzkoa County Council had always considered this railway as essential for completing the provincial railway network, after termination of the work on the *Vasco-Navarro* line, in which it actively participated. At that time, the Urola was the only valley of importance in the province not to be served by the railway, with villages as important as Azkoitia, Azpeitia and Zestoa, and centres of touristic attraction such as the Loiola Sanctuary and the Zestoa spa. It therefore publicly offered

important grants and subsidies to the company who took charge of the concession. But these efforts were made in vain, and the capital continued to show no interest in the subject.

In view of the lack of interest incited by the line among private companies, and in the face of the danger that the Urola railway might never be built, the County Council decided to take the initiative and apply for the concession to build and construct the line itself. One of the driving forces behind this initiative was Julian Elorza, from Azpeitia, who was then President of the Council.

A Royal Decree issued on 5th October 1920 granted the concession to the Council, putting Manuel Alonso Zabala in charge of the works.

The line was given the best possible route at all times, meaning, in view of the roughness of the land, that 20 bridges and 29 tunnels had to be built on a line measuring only 36 kilometres in length. The minimum radius of the bends was 120 m., double that anticipated by Alzola. This factor made its operation easier and permitted higher speeds.

Compressed air machines were used to bore the tunnels. Present-day portable compressors didn't exist at the time, therefore requiring the installation, between Urretxu and Azkoitia, of six central compressors joined by a pressure pipe line with an air intake every thirty metres.

Although it was first anticipated that the line would function with steam traction, the constructors soon understood the interest of applying electricity, not only in order to avoid annoying smoke in the tunnels, but especially because the electric units could be handled by one single person, with the subsequent savings in personnel, since the stoker therefore became unnecessary. This investment was extremely interesting for a railway which did not expect a high income.

Finally the great day arrived. On the morning of 22nd February 1926, King Alfonso the 13th arrived along the Northern Railway lines to Zumárraga to open the new line. After having mounted the modern electric units, built in Saragossa and Beasain, he set out on the journey to Donostia, stopping at all of the stations along the way, where both the King and the new means of transport were applauded by the population. In Azpeitia, the authorities visited the offices, sheds and the electricity power station, where they unveiled a magnificent commemorative plaque which can still be seen today. The procession then made its way to Zumaia, where the Urola motor was replaced by a steam engine, since the *Vascongados* Railway Company still didn't have electric lines.

On arriving in Donostia, the steam engine was replaced by another electric engine belonging to the *Topo* line, which pulled the convoy along the local Hernani trin line to the Plaza de Gipuzkoa. A series of speeches were made in the County Council building following which a banquet was offered with a menu well worth repeating here:

Mixed Hors d'oeuvre

Poached eggs, Regent-style

Salmon from the Bidassoa River
Tartar Sauce

Liver pie Holy Alliance-style

Home-cooked fresh peas

Chicken Urrestilla-style
Italian Salad

Fruit salad
Millfeuille tart
Varied sweetmeats

This was all washed down with 1904 red wines from the Upper Rioja region and 1913 *Cordon Rouge* champagne, not to mention the coffees, liqueurs and cigars.

The opening ceremony was suitably fitting in size to the work that had been carried out - an extremely favourable stretch of line that can still be seen, which underlined the difficult passage between Azkoitia and Urretxu where, while the road snakes along the banks of the river, the railway follows a straight line, overcoming the difficulties of the land with a neverending series of bridges and tunnels.

The stations were also at the height of the circumstances. Each one was different, and they were all designed by the famous architect Ramón Cortazar in a typically Basque style. The electrification, the tracks, the trains, in short everything, was of unquestionable quality. The County Council spared no effort in making a narrow-gauge railway which was exemplary in many aspects.

However, the best installations are not in themselves sufficient to guarantee the future of a railway. Appropriate investment must also be made in its future maintenance. Unfortunately, this was not the case and, in 1986, the year the line was closed, the same trains as sixty years earlier were still running on worn tracks that had been lain in 1925.

On the other hand, income from the line was always scarce and it was extremely unusual to find a year where the financial balance wasn't in the red.

Due to approval of the Historical Territories Law in 1985, the Gipuzkoa County Council transferred a moribund Urola railway to the Basque Government. A fast decision had to be taken with respect to its future, since its trains no longer met even the most basic conditions for running a service with minimum safety.

The dilemma was complicated. Either the railway had to be modernised, thereby implying its total reconstruction and hence strong investment, or replaced by a road service at a lower cost. Finally, in spite of initial hesitation and the timid modernisation works carried out in 1986, and in spite of opposition from wide sectors of the population, it was decided to close the railway. Today a different decision might have been taken, but the Urola train unfortunately ran for the last time on 16th July 1986. Its final closure came about on 5th February 1988.

The steam engine

Since its appearance in 1830, until half-way through the 20th century, the steam engine was the unquestionable king of railway traction. During its long reign, its technical evolution was limited, since, although machines were increasingly more powerful, fast and heavy, the basic principles established by George Stephenson on his *Rocket* had not changed. In 1830, the *Rocket* had won the competition organised by the Liverpool to Manchester line, the first in the world to be exclusively served by steam engines.

The heart of the steam engine is its boiler, which, by burning coal (although other material can also be used such as wood and petrol - in Brazil, for example, they even burned coffee and in Cuba they still use sugar cane), heats the water until it turns into steam. The expansive strength of the steam activates the cylinders which, in turn, propel the wheels by means of connecting rods and handles. The steam engine is completed with the corresponding water and coal tanks, known as tenders, and all the accessories necessary for their service.

The energetic output of the steam engine was extremely small, benefitting from barely 8% of the calorific strength produced by the consumed fuel, meaning that more than one authority was led to qualifying them as extravagant consumers of coal. Their diesel or electric sisters are much more efficient, although steam engines were much easier to maintain, given

their great simplicity, a factor which ensured their survival in Europe until the seventies. In 1983 a few steam engines of this kind were still running in the installations of *Altos Hornos de Vizcaya* in Sestao. Today we can still find several cases of working trains in countries like China, India or South Africa, where coal is abundant and labour is cheap.

Inseparable from the steam engine was the so-called "couple" formed by the engine driver and the stoker, whose lives were closely linked to the machine, since each couple had its own engine. When they were both resting, the train was removed from the shed, and, when they were both on holiday, the train was given a rejuvenation treatment in the main workshops. It was therefore normal for many engine drivers, together with their families, to spend their holidays in Valladolid; not because the Castilian capital offers touristic attractions, but because it is where the General workshops of the Northern Railway Company were located.

The work of the engine driver, and especially that of the stoker, was hard and laborious. The working day could last for twelve, fourteen, or more hours, depending on the service. During this time, the stoker had to constantly feed the insatiable furnace of the machine, which could consume more than ten tons of coal in one day, provided the fuel was of good quality since, to the contrary, the work became more complicated as the fire had to be poked constantly. Nor did they get the chance to rest, since at each stop they had to take on water, oil the wheels and connecting rods and polish the metal on the engine.

It can be said that the "couple" lived with its engine. They were often obliged to eat *en route*, and soon the inventiveness of the railwaymen discovered new ways of cooking. After cleaning the stoker's shovel, they would make it into a makeshift frying pan on which they would fry eggs and spicy sausage over the heat of the furnace. More sophisticated were the so-called railway "stewpots", double-sided metal pots which they would heat with the steam of the boiler. This system was ideal for preparing all kinds of stews and, according to the engine drivers, the jolting of the engine is the best system for thickening any sauce. This "stewpot" tradition can still be found in places with deep railway roots such as Balmaseda, Mataporquera or Cistierna, ancient neuralgic centres for the *La Robla* railway, where amusing gastronomic competitions are organised each year with the recipes used by the ancient railwaymen.

Steam engines were never good climbers, and the tendency of their wheels to slip at the slightest difficulty was notorious. Stretches such as the ramp between Beasain and Otzaurte obliged them to use double traction (two engines at the head of the train), and add a third engine at the back. Sometimes the engines would slip inside one of the long tunnels along the way, making the engine drivers lose their sense of direction in the dark and thick smoke. When this happened, they would touch the walls of the tunnel with the shovel or a brush to make sure that the train was still making its difficult way forward or, to the contrary, that it was slipping backwards. More than once, engine drivers and stokers suffered symptoms of asphyxia in this closed and unbreathable atmosphere, and mainly those responsible for the engine at the tail, who were affected by the smoke from three engines.

The electrification of this line in 1929, meant a greater revolution for the engine drivers than that brought about today with High-Speed trains. It did away not only with smoke and dirtiness, but also with the hard living conditions of working with steam. In 1956, with the disappearance of the Bidassoa Railway, Gipuzkoa saw the disappearance of the last railway line served by steam engines, although some were still kept running until the seventies in order to carry out manoeuvres in the stations of Irún, Donostia and Zumárraga.

But the steam era has not disappeared forever. Today it is still possible to relive this period in the Museum of Basque Railways in Azpeitia, where hundred-year-old steam engines are kept in perfect running condition.

High-speed trains

As from the sixties, and with the indiscriminate development of the car and the construction of modern moterways, it seemed that the railway was destined to become a thing of the past. In fact, the institutions didn't hesitate to back the private vehicle by building several infrastructures in to increase road capacity, while the investments destined to the railway decreased daily.

Circulatory problems, accoustic and atmospheric contamination, and increasingly more dehumanised cities are the tangible consequences of this erroneous transport policy.

Public transport is therefore the best alternative to our society's increasing demand for mobility, and the railway has the least aggressive effect on the environment.

However, in order for the railway to be able to compete with the road in the same conditions, it is not enough just to build new trains, since they will be unable to run on the tracks built in the last century, made to suit the speed of steam engines and not for modern versions, while cars travel on modern motorways built at the end of the century.

Japan was the pioneer country regarding the development of High-Speed trains. Whilst in Europe the railway was gradually losing its fight against the car, in the country of the rising sun it became the solution to the transport problem in a land characterised by an extremely high population density, thereby making the development of new infrastructures difficult and obliging it to make the most of its available infrastructures.

The Japanese railway network comprised narrow-gauge lines built during the last century. Their transport capacity was almost saturated and their technical characteristics didn't permit speeds of more than 100 Km./hr. Although it was possible to try and improve the existing lines, the cost of the operation was extremely high, while the results were poor. For this reason, in 1962, they decided to build a completely new network, with tracks designed for the development of speeds of over 200 Km./hr. The first line, between Tokio and Osaka, opened on the occasion of the Olympic Games, meant an unprecedented revolution, and it has now turned into a sort of regional metro, with trains running between both capitals every five minutes. The reduction in travelling time with respect to the old narrow-gauge line was more than 60%.

The success of Japanese bullet trains was a real lesson for European railways, on proving that a means of transport considered out-of-date was capable of advantageously competing not only with the road, but also with the airplane in distances shorter than 800 Km. However, the institutions dragged their feet with respect to allocating the necessary economic resources to modernising the railway network.

The first High-Speed train service started running on the European continent in 1981, from Paris to Lyon, and in fact it is France that has been responsible for the main development of High-Speed trains, with frequent 300 Km./hr. services to Bordeaux and, along conventional lines and at lower speeds, to Irún. The construction of the Eurotunnel has permitted High-Speed trains to connect Paris and Brussels to London.

Germany and Italy have also started building new high-speed lines, while Great Britain has opted for improving existing lines along which trains can run at speeds of 225 and 250 Km./hr. This choice, more economical and with less impact, is viable in a country with no serious orographical obstacles.

In the Spanish state, the construction of the High-Speed line from Madrid to Seville was the first experience of this kind, while studies are now being made to build new lines from Madrid to Barcelona as well as the so-called Basque "Y" railway, which

could see its development compromised by present budgetary limitations.

In the case of the so-called "Y" railway, a new route is being studied which would link Bilbao to Vitoria-Gasteiz, Donostia and the border, the vertex of which would be located in the area around Arrasate. The roughness of the present railway network is an important setback to the development of high speeds, and its adaptation to present-day necessities is not viable, meaning that it is impossible for it to compete with motorways.

A few voices have recently been raised against High-Speed trains due to their possible environmental impact. It is obvious that any human activity directly and indirectly affects the environment, but, with respect to transport, the railway, and even the High-Speed railway, is less aggressive than the road. It is the only system capable of using the electricity produced by renewable energy sources. The energetic output per transported traveller, in spite of certain recently published information, is far lower than any other means of transport. One excellent example of this is the *AVE* (High-Speed train) service running from Madrid to Seville, which, in economy mode, travels half the distance with the throttle closed, that is, without consuming energy. It is even capable of generating electricity when it brakes, which can in turn be used by other trains on the line.

Only when we can go from Donostia to Bilbao or Vitoria-Gasteiz in 40 minutes will people stop using their car to cover the same distance.

Trains, mines and factories

An appropriate system of transportation is essential for starting up any mining exploitation, since the end price of the mineral, and therefore the profitability of the mine, are closely linked to the cost of haulage to production and consumption centres.

In Gipuzkoa, mining activity was at the origin of five railways, as well as other systems such as aerial cables. Two of these services later became the origin of two railway lines of general interest.

Running in an East to West direction, we start with the town of Irún, which had the first mining railway linking the mines in the area to the Northern Railway station. From there, the mineral was transported in freight cars to its final destiny: the blast furnaces in Bayonne. Built in 1886 by a British company, this railway had a very British gauge width, 3 feet (0.92 m.). Years later, in 1916, it became a metre-gauge line and was extended as far as Elizondo, thereby becoming part of the so-called Bidassoa railway.

The area around Oiartzun saw the coexistence of two mining railways. The main line, built in 1901, linked the Arditurri mines with the port of Pasajes. A large cantilever-type bridge meant that the freight cars could be unloaded by tipping them directly into the hold of the ships. This mining train, with its line gauge of 0.75 m., was closed in 1965.

Partly parallel to this train, but incompatible with it due to its tiny narrow-gauge of 60 cm., another train service started functioning in 1898. This service linked the several mines and forestry exploitations in the area around Artikuzta to the Northern Railway station in Rentería. Its almost 30 Km. in length meant that it was the longest train on the peninsula in the this category. However, its life was short-lived, as it was abandoned by its promotors in 1917. Shortly afterwards, the Gipuzkoa County Council took over the final stretch between Karrika and Gabierrota, in order to transport stone, which was later used to pavement the provincial road network. This stretch continued working until the fifties.

The Plazaola railway was built in 1901 with an end to simplifying transportation of the iron minerals extracted from the mines of the same name. This line, which measured one metre in width, snaked through the valley of Leizarán to Andoain station, where the load was transferred to trains belonging to the Northern Railway Company. In 1914, the line was extended at both extremes, from Plazaola to Pamplona and from Andoain to Lasarte, where the change was made to trains belonging to the *Vascongados* Railway line, thereby becoming a railway of general interest. Whatever the case, the transportation of minerals was always the main traffic on the Plazaola line, which didn't survive for long after the mines were closed down in the forties. Seriously affected by floods in 1953, the line was closed, although the odd train carrying forestry produce through the valley of Leizarán could still be seen until 1959.

The Mutiloa mines also had a small railway which ran to the Northern railway station in Ormaiztegi. Built at the beginning of the century with a gauge width of 75 cm., its small steam engine, baptised "Mutiloa", made its last journey in 1947. Shortly afterwards, the installations were dismantled, although its picturesque route is still virtually intact.

Not only did the railway contribute to the development of mining, but also to that of certain industries, as was the case of the Rezola cement factory in Añorga. A complex railway network permitted the transportation of stone from the quarries to the factory, while the two branche lins made it easy to bring the product out of the factory along the lines belonging both to the *Vascongados* Railway or the local train running from Donostia to Tolosa. Steam, diesel and electric engines, and even curious trolley-trucks travelled to the furthest corner of its industrial installations.

One of the most interesting industrial railway networks in Gipuzkoa is that found in the port of Pasajes. Good connections with the railway network are essential for any port in order to make it easier to transport loads to and from ships.

The railway network inside the port of Pasajes had the outstanding characteristic of double-width tracks, since it connected both with the lines belonging to the Northern Railway Company (1.67 metres in width) as well as those belonging to the *Topo* and the local Donostia train service, both of which are one metre wide. The port of Pasajes came to own its own steam engines, later modernisating its trains with diesel engines during the seventies. However, until the early eighties, it would sometimes put a steam engine in to use which, unfortunately, was scrapped in 1989.

Bridges and tunnels

The great virtue of the railway, the scarce friction between the wheel and the steel tracks, a factor which allows it to haul great loads with little effort, becomes a disadvantage on climbing slopes, where the engines slip easily when faced with the smallest obstacle. Ramps of over 3% are almost insurmountable for conventional trains, and other systems have to be used such as rack or funicular railways.

In a territory like Gipuzkoa, with its extremely rugged orography, the establishment of railways was only made possible by taking recourse to the carrying out of impressive engineering works.

It was thanks to the construction of daring viaducts across rivers and valleys and the boring of long tunnels to overcome the mountains, that a viable railway network could be set up in Gipuzkoa.

The first great engineering work carried out in Gipuzkoa was the construction of the Northern Railway. A total of 22 tunnels with a combined length of 10,402 m. through the entrails of the earth, punctuate the hard ascent from Beasain to Alsasua. Outstanding is the tunnel of Oazurza which, when it was built in 1863, with its 2,957 m. in length, was the longest in the state, a record it still holds in the Basque Country.

Another 9 tunnels completed the route to Irún, with a total length of 3,822 m.

The Northern Railway Company also had to build important bridges, among which was the outstanding Ormaiztegi viaduct, with its five metallic separations and 289 m. in length. This bridge has recently been pensioned-off, as a new concrete version has been built nearby. However, thanks to the love of the people, due to which it has become an inseparable image, the old bridge will be kept as a monument. Another nine viaducts span the main rivers in Gipuzkoa.

Although the philosophy of narrow-gauge lines was that of avoiding the building of large works as far as possible, certain geographical factors often meant that the entrails of the earth had to be perforated. Excellent examples of this were the late Plazaola railway line and the popular *Topo* train. The former, between Andoain and Leiza, required 34 tunnels, coming to a total of 3,000 m., which are now used for leisure by strollers and bicycle riders. The *Topo*, or "mole" as its nickname implies, has 14 tunnels which represent a 20% of the whole line, although the most outstanding tunnel is nº 2 for its 2,072 m. in length.

An outstanding example of good work was offered to us by the no longer existing Urola railway, built in 1926 by Gipuzkoa County Council. Its daring route meant that it could easily follow the rugged course of the river Urola between Azkoitia and Urretxu, thanks to the 16 bridges and 17 tunnels built along its short route. Its exemplary layout is still the envy of the car drivers who circulate in this area, since they have to put up with one of the most winding and busy roads in Gipuzkoa.

Nor could the *Vascongados* Railway avoid great works of infrastructure, as it had to build a total of 28 tunnels, coming to 8,288 m. in length. Among these tunnels is the shortest in Gipuzkoa, that of Mogote, situated between Deba and Itziar, which measures 26 m. in length. Very near here, *Euskotrenbideak* has started building the new Arronamendi tunnel, with almost 1,200 m. in length, which will mean the elimination of one of the most troubled spots on the line, given the instability of the banks supporting the stretch to be rectified. The graceful metallic Zumaia viaduct and the no less attractive curved viaduct in Orio complete a stretch where we mustn't forget the unusual retaining walls lying between Elgoibar and Alzola. Their huge round stones seem to have taken direct inspiration from Inca empire constructions.

Railway junctions

Since the appearance of the railway, the station has become one of the most active parts of any town. Travellers arrive, merchandise is transferred, people come to say goodbye to a member of the family or friends, thereby creating a special microcosmos, conveniently equipped with the typical buffet, waiting rooms (which used to be separated into 1st, 2nd and 3rd class) and even perhaps a nearby hotel (Donostia's Terminus Hotel is a faithful reflection of this period).

But the place where the railway took on its true nature was at the so-called "railway junctions", stations where different lines came together and where the movement of travellers and merchandise was greater due to the need to change trains. Irún, Donostia, Lasarte, Andoain, Zumaia, Málzaga, Mekolalde and San Prudencio made up the network of Gipuzkoan railway junctions, together with Zumárraga station, outstanding in importance.

It was in Zumárraga that the standard-gauge Northern Railway Company line, built in 1864, met the metre-gauge Málzaga to Zumárraga line, opened in 1889. A later addition to these lines, in 1926, was the Urola Railway, also metre-gauge, while in the forties, Patricio Echeverria built a branch line from Zumárraga to Legazpia, with the peculiarity that it had three tracks, thereby allowing the passage both standard and narrow-gauge trains.

These three railway companies built their train stations close to each another, due to which the area gradually became known as station quarter. The *Vascongados* station, abandoned in 1972, was knocked down in 1988, while the Urola station, which has been out of use since 1986, is waiting for the municipality to decide what use it should be given. Only *RENFE*, heir of the Northern Railway Company, still enjoys intensive traffic of travellers and merchandise, a reminder of the past railway splendour in the area.

Given the different width of track used by the three competing companies, past activity in the stations of Zumárraga was incessant, and all kinds of merchandise was transferred from freight car to freight car. These operations were normally carried out manually, since only a few cranes were available, none of which were motorised, meaning that they required a lot of workmen.

Many people confirm that Zumárraga station was the main employment office during the fifties. Immigrants from the Plateau waiting for their connection to other places such as Bergara, Eibar or Azpeitia were approached by the managers of local factories such as Orbegozo and Madaya, who would offer them a job during this period of abundant work but little pay. The station buffet and the no-longer existing Urola hotel were places of undeniable animation, stoked by the incessant passage of trains.

It is Irún station which now enjoys the greatest railway activity in Gipuzkoa. Here the *RENFE* lines meet the French National Railways (S.N.C.F.), which, as we know, have a different gauge. This means that, except for the Talgo, which has a clever gauge-changing system, and a few express and freight trains that can change their axles, merchandise and travellers have to change trains, just as they had to do in Zumárraga all these years ago. But systems have changed. Several cranes make the task easier, while the massive use of containers speeds up the necessary operations. No matter what the case, the extensive installations in this station, and the possibility of running into confused travellers from all over the world, make it a very unusual place in our province.

Railway Junctions in Gipuzkoa:

Irún:	Rail link between the Topo and Bidassoa trains.
Donostia:	Rail link between the Topo and *Vascongados* lines.
Lasarte:	Rail link between the *Vascongados* and Plazaola lines.
Andoain:	Rail link between the Northern Railway and Plazaola lines.
Zumaia:	Rail link between the *Vascongados* and Urola lines.
Málzaga:	Rail link between the main *Vascongados* line and its branch line to Zumárraga.
Mekolalde:	Rail link between the branch line from Málzaga to Zumárraga and the *Vasco-Navarro* line.
S Prudencio:	Rail link between the *Vasco-Navarro* line and the Oñati branch line.
Zumárraga:	Rail link between the Northern line, the Urola line and the *Vascongados* line, which includes the industrial branch line running to Legazpia, owned by *Patrico Echeverria*.

Making trains

One of the most characteristic aspects of industry in the Basque Country in general and Gipuzkoa in particular, is the high specialisation regarding the construction of railway material. Several factories, from modest workshops to huge

manufacturing complexes, have supplied the railway with objects ranging from screws to engines, passing through the widest selection of accessories.

Several Gipuzkoan companies used to supply the railway with all the elements required for functioning. The *Unión Cerrajera* in Mondragon made rail screws for joining the tracks to the sleepers, *Alcorta y Mendizabal* different kinds of suspension springs, *Bonifacio Echeverria* drag-chains and draw-hooks, and a long list of etceteras.

However, possibly the most outstanding activity was the construction and reparation of mobile material. A few modest workshops, such as *Urcula* in San Sebastian made the odd piece in the twenties. Others, such as the *Ambrona* workshops in Herrera, still sporadically repair the occasional freight car.

The most outstanding Gipuzkoan companies in this sector were, without a doubt, the recently disappeared *Herederos de Ramón Múgica* and, especially, the *Compañía Auxiliar de Ferrocarriles*, CAF, in Beasain.

The former started functioning towards the end of the last century in Donostia, next to the Northern Railway station, on the site which now houses the tower block known as *Atotxa*, beside to the old football ground. It was precisely this company that gave its name to one of the Real Sociedad football team's most boisterous supporters' clubs.

This company didn't start out in the railway, but in industrial carpentry, for which it mainly made wooden blinds. But it is possible that the proximity of the station, as well as the fact that most carriages and freight cars were built in wood, encouraged Múgica to enter the field of railway construction.

Right from the very beginning, *Herederos de Ramón Múgica* specialised in the construction of wagons, becoming famous for their *foudre* freight cars, especially made for transporting wine. These cars were similar in appearance to closed freight cars, with the difference that they had huge barrels inside for carrying this precious potion. Later the model evolved, eventually becoming modern tank wagons.

At the beginning of the sixties, Ramón Múgica moved his installations to Irún, where he continued his activity until the early nineties. This company only built a few passenger carriages in the twenties for the Northern Railway Company. During the fifties it also supplied *Cementos Rezola* with a series of unusual electric trains for its own private service.

However, the main industry in the sector, not only in Gipuzkoa, but in the whole state, is undoubtedly that of the *CAF*.

The origins of this company lie in the Yurre and Igartza ironworks in Beasain. Their owners, the Goitia and Usabiaga families, merged half-way through last century, creating the San Martín de Urbieta Ironworks, where, in 1861, the first blast furnace in Gipuzkoa was installed.

The company underwent its first restructuring in 1892, when it became *La Maquinista Guipuzcoana*. It was at this moment that it started building railway material, although not exclusively, since it also manufactured fixed steam engines, hydraulic turbines, flour grinding mills, and even metal road bridges.

In 1901 the Beasain factory was absorbed by the *Sociedad Española de Construcciones Metálicas*, finally dedicating itself to the manufacturing of carriages. In 1917, its installations were leased by the the *Compañía Auxiliar de Ferrocariles* (Auxiliar Railway Company), or *CAF*. This company started manufacturing electric engines in 1928 and, a few years later, supplied the *Compañía del Norte* with its first diesel engines.

During the forties, the *CAF* opened a new factory in Irún which specialised in important repairs to railway material, although it occasionally produced the odd train. In the sixties, *CAF* merged with the company *Zaragozana Material Móvil y Construcciones*, the workshops previously owned by *Carde y Escoriaza*, and changing its name to *Construcciones y Auxiliar de Ferrocarriles*, thereby allowing it to maintain its historical initials.

After several years of hard of crisis last decade, when the future of the company was seriously compromised due to the fall in demand of the until then almost exclusive client, *RENFE*, the present health of this hundred-year-old industry looks promising. Its dependence has reduced with respect to the state railway company, and its presence has notably increased in exterior markets.

Today, *CAF* holds a position of leadership in the sector on a state level, and now rubs elbows with the main European multinationals. Its trains run on *RENFE* and *FEVE* lines, on railways belonging to the Autonomous Government of Catalonia and Valencia, Mallorcan railways and, of course, *Euskotrenbideak*. The undergrounds of Madrid, Valencia and Barcelona are also faithful clients, as was the recently completed Bilbao underground. Recent years have seen trains with modern technology leave its premises for Valencia and Lisbon, underground trains for the city of Mexico and Monterrey and High-Speed carriages for Hungarian railways, while the latest orders have wide-ranging destinies such as London, Amsterdam and Hong Kong.

But *CAF* has wisely combined modern technologies with respect for a hundred-year-old tradition, meaning that it has recovered its old workshops, restoring buildings of outstanding architectural value, and adapted them to their manufacturing necessities. It has also participated in *Euskotrenbideak*'s Basque Railway Museum with respect to the reconstruction of old pieces that left their workshops some sixty years ago.

Tramways and Trolleybuses

The urban expansion experienced by large cities during the last century wouldn't have been possible without the parallel development of the appropriate means of transport. Roads and stagecoaches were extremely uncomfortable, slow and noisy, meaning that the decision was soon made to adapt the principles of the railway to urban transport. This brought about the birth of the tramway.

In Gipuzkoa, the first trams circulated between the Miraconcha and Ategorrieta suburbs, via the Boulevard, in 1887, after which its route was immediately extended to include Venta-Berri and Rentería respectively. In 1893, a tramway was established in Irún and later extended to Fuenterrabía in 1896.

Like in other parts of the world, the first tramways in Gipuzkoa used animal haulage, since the passage of smoky steam engines through the streets of the city was unhealthy and dangerous. However, neither was the use of horses free from problems, and the service sometimes had to be suspended when the animals fell ill.

In order to improve the service, the San Sebastian Tramway Company decided to electrify its lines, and the new system of traction was inaugurated in 1897, even before cities like Madrid and Barcelona. The line running from Irún to Fuenterrabía was electrified in 1919.

The change of century saw the start of the real expansion of the tramway service, both by the San Sebastian Tramway Company, as well as by other companies. The former established lines running to Amara (1903), Igueldo (1912) and Gros (1915). In 1903, the *Mount Ulia* Company built a touristic tramway running from Ategorrieta to the said mount while, that same year, the San Sebastian to Hernani Tramway Service started running. Finally, in 1912, the Gipuzkoan tramway network was completed with the inauguration of an electric tramway running from San Sebastian to Tolosa.

For years, tramways provided an efficient and indispensable transport service, both to passengers and merchandise, and especially the Tolosa line which, in combination with the city network, went as far as the quais of Donostia and Pasajes.

Unfortunately, the hard years of the war and the immediate post-war period prevented the tramways from being properly

renovated. Vehicles dating from the beginning of the century could hardly guarantee the service and the owner companies, backed by town councils and other institutions, decided to do away with the tramways, like in France, in stead of proceeding with their logical modernisation, like in Germany

From 1948 to 1952, the San Sebastian city tramways, like the Tolosa tramway, were replaced by modern trolleybuses, while in 1953, the tramway from Irún to Fuenterrabía disappeared, being replaced by smoking buses. The tramway completely disappeared from Gipuzkoa in 1958 when the Hernani line was closed down.

For a number of years, quiet and clean trolleybuses became the inseparable emblem of Donostia, mainly dominated by the elegant double-deckered buses imported from London in 1962. The Igueldo line offered an incomparable panorama of the bay of Donostia. But, like the tramways, someone decided that they were out of fashion and that they disturbed the growing traffic, without realising that the factor which really disturbed the traffic was neither the tramways nor the trolleybuses, nor the wide pavements with their traffic lights, but the traffic itself, generated by the uncontrolled development of the car. Therefore, the non-contaminating trolleybuses, which ran on electric energy produced by the Berchín falls in Leizarán, were replaced from 1968 until 1974 by smoking buses.

During recent years, growing environmental awareness and the problems caused by the excessive development of cars, have brought about an increase in the promotion of public transport and, with this, the rediscovery of tramways and trolleybuses. In places where this means of transport was wisely not eliminated, these services have been modernised, while in many cities from which they were withdrawn in France, Great Britain and the United States, they are now being re-introduced.

The modern tramway combines respect for the environment with a transportation capacity similar to that of the underground, but with investments which don't even reach 20% of the cost of the latter. Recent studies propose that tramways be reintroduced to the streets of Donostia and, perhaps at the beginning of the century, we will be able to travel once again in a means of transport that should never have disappeared.

The basque railway musseum

After years of disinvestment in public railway transport, an important change in tendency started appearing towards the end of the eighties. The Basque railways were gradually renovated, and the trains which had run on them until then, some of which were more than sixty years old, were put to deserved rest.

It seemed inevitable that the destiny of these pieces, now historical, would be the breaker's yard, but the growing awareness of the institutions regarding the patrimonial value of these trains, moved the Transport and Public Works Department of the Basque Government to take, in 1989, the first steps towards the creation of the Basque Railway Museum.

After having carried out an inventory, which reflected the extremely valuable railway patrimony existing in the Basque Country, which, by itself alone, justified the creation of a museum, the Government set about finding an appropriate home for this initiative. The choice fell on the old Azpeitia station, which had plenty of available space, an important factor in a museum of these characteristics. Azpeitia also offered other elements of interest such as the existence of railway buildings of important aesthetic and architectural value, as well as the old Urola railway workshop, well preserved in its original early-century condition. Nor must we forget that Azpeitia and the nearby Loiola Sanctuary are one of the main tourist attractions in the Basque Country.

Work on the first stage of the Museum and restoration of the first pieces was started in 1990. The old Urola railway sheds were also fitted out in order to bring together the historical material scattered all over the Basque Country.

The first stage of the Museum was opened on 20th January 1992. Two exhibition rooms, a library, assembly hall and periodical excursions on steam engines were a preview of the activities which were shortly to be offered by the Museum, since, months later, work was started on its second and final stage.

While the renovations recovered the old railway sheds and transforming substation as exhibition areas, historical railway vehicles were continuously being recovered and conserved, as were other elements such as the extremely valuable collection of railway clocks brought together by Jesús Minguez.

Finally, the second stage of the Museum which is, broadly speaking, the part which can now be visited, was opened on 4th October 1994.

The end of the work does not, however, mean that the Museum is finished. On the contrary, the work of recovering and restorating historical pieces has been continued. Another plan shortly to be carried out is that of extending the tracks of its historical material to the nearby Cestona Spa.

The only thing left to do is to invite you to visit this interesting Museum, perhaps poorly known in Gipuzkoa, but considered as one of the best in its genre on a European level.

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