200™
Years of Train Travel
Since 1825

The story of the Railway over 200 years and the events that changed the world forever.

The first EVER passenger train

This book tells of the historic moment when, on 27 September 1825, George Stephenson's steam powered Locomotion No.1 travelled 26 miles between Shildon, Darlington and Stockton, carrying hundreds of passengers to great fanfare.

It set in motion a train of events that changed the world forever!

Contents

Life Before Railways

Hundreds of years ago there were no big towns or cities and most people lived in villages and worked on farms.

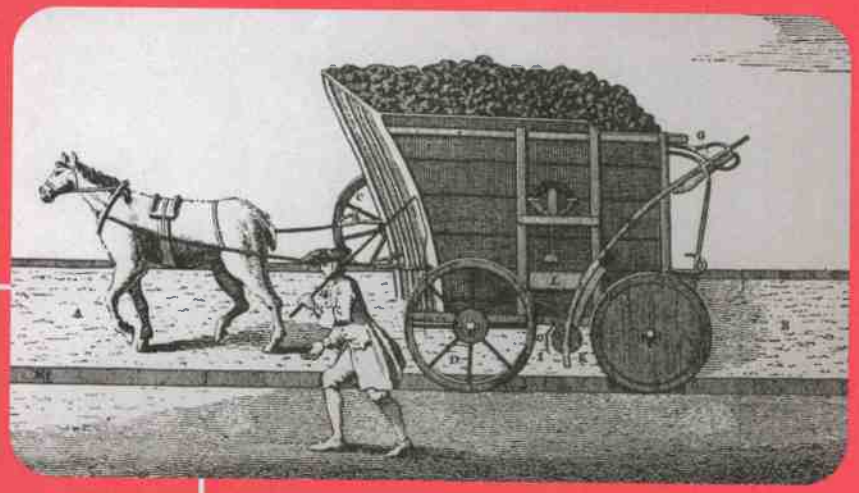
In the 1700's people started to make things from iron and steel, this period is now called the ***Industrial Revolution.***

Iron ore was dug out of the ground and then melted in big furnaces to make steel. The furnaces burned coal which was mined underground. Children aged only 6 or 7 were sent down the coalmines where they worked very hard by pushing wagons loaded with coal along dark tunnels to the mine entrance.

Wheels on Rails

In the 1700s coal could only be moved by a horse pulling a wagon. Horse drawn wagons were **slow** moving and were not big enough to move all the iron and coal that the furnaces needed. To make things worse the wagons' wheels stuck in the muddy roads.

It was discovered that a better way to move coal was by putting the wagon wheels on to an iron rail which made the load much easier to pull. Long cast iron rails were placed under the wheels on each side of the wagon and the first railway track was invented.



How Does the Wheel Stay on the Rail?

The inside edge of every wheel has a wider rim called a flange. The wheel is also conical in shape. These two factors keep the wheel running on the rails.

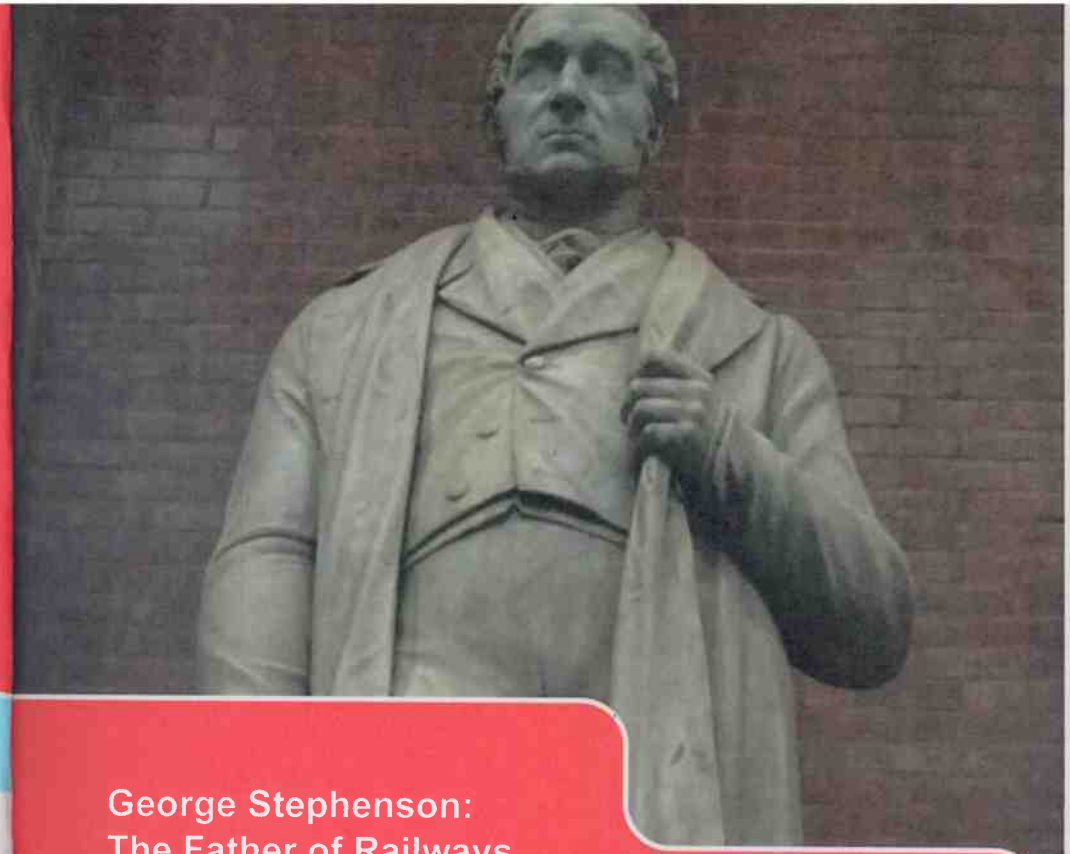
The contact point between the wheel and the rail is about the size of a 10 pence piece.

Extending the Rails Beyond the Coal Mine

Wooden rails were used in the 1700s so that wagons did not get stuck in the mud. Later cast iron and then steel rail was used as it was stronger and lasted longer.

The engineers asked the question "Why don't we extend the rails beyond the mine and take the coal all the way to the furnaces?"

So in 1825 a railway track was built between Stockton, Darlington and Shildon, a distance of 26 miles. It was built to move coal from the mines and it also carried people between the towns.



George Stephenson: The Father of Railways

The first coal wagons were pulled along the rails by horses. Even a very big horse could only pull 1 or 2 wagons. Something more powerful was needed.

George Stephenson worked in the mines at the age of eight. He was a self-taught engineer and by the age of nineteen he was operating a stationary steam engine to pump water out of the coal mines.

George knew all about the problems with moving coal by horse. He thought he could find a way to make a steam engine pull coal wagons. He worked with his son Robert and they built a steam engine which they called Locomotion No.1. It was this engine that pulled the first passenger train from Shildon on 27 September 1825.

A horse and wagon moved at 3 miles per hour and took 8 hours for the journey. Locomotion No.1 moved at 15 miles per hour and took one and a half hours for the journey.

The Rocket

In 1829 George Stephenson and his son Robert thought they could make an even faster locomotive so they built a new steam engine which travelled at 30 miles per hour and they called it ***Rocket***.

Stephenson's Rocket is one of the most famous early steam locomotives. It can be seen today in the National Railway Museum at York. It was the first to bring together several clever ideas to produce the most advanced locomotive of its day.

It was built to compete in the Rainhill Trials, a competition to determine the best locomotive for the new Liverpool and Manchester Railway. The Rocket won the trials, demonstrating that Stephenson's design was the best.

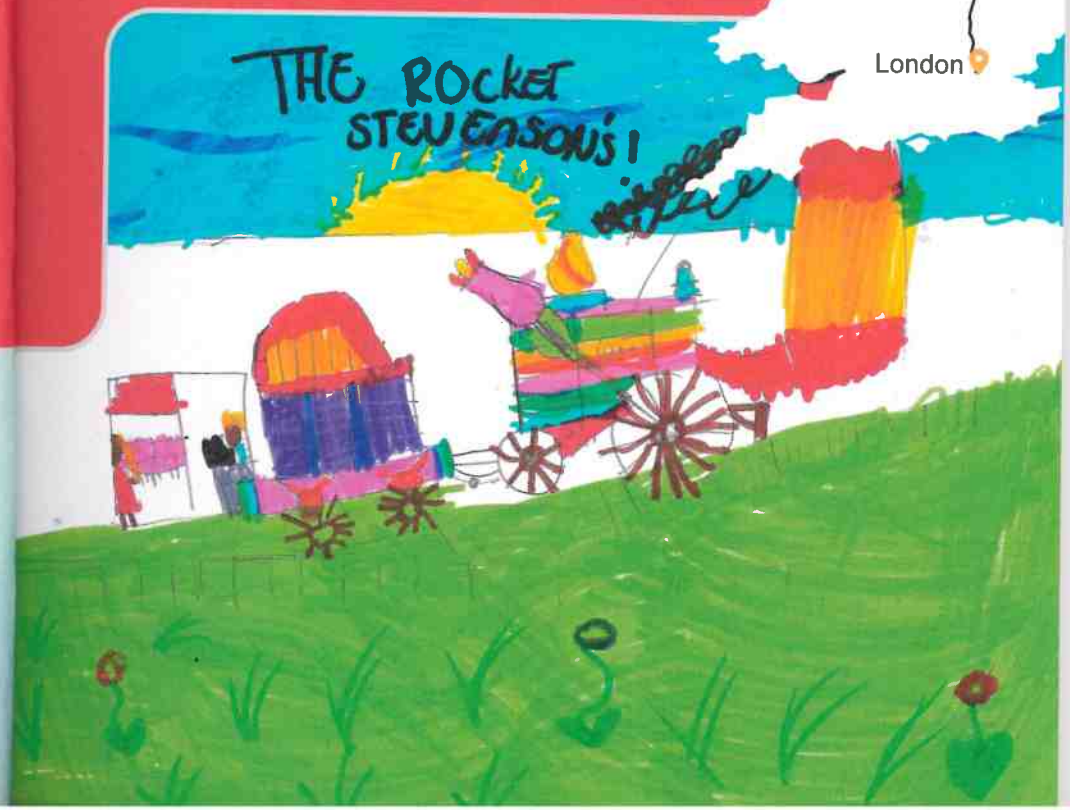
The Rocket's success helped pave the way for the widespread use of steam locomotives in the 19th and 20th centuries making long distance travel possible for everyone.

The Train Becomes a Time Machine

Imagine an 180 mile journey from London to York.

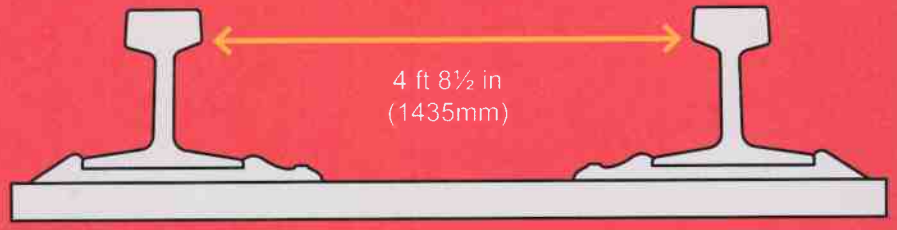
- In 200 AD, a Roman soldier took ***9 days***
- In 1750, a horse drawn stage coach took ***3 days***
- In 1840, an early steam train took ***5 hours***
- In 1935, The Flying Scotsman steam train took ***3 hours***
- In 1975, a high speed diesel train took ***2 hours***
- In 2025, an electric Azuma train takes ***1 hour 50 minutes***

If you told the Roman soldier that one day someone would get from London to York in less than 2 hours he would think they used a machine for time travellers.



Why Are the Rails That Distance Apart?

The gauge of a railway track is the distance between the two rails. Before railways, horse drawn carts would leave ruts in the road. To stop the carts from sinking deeper in the mud lengths of timber were laid for the wagon wheels to run along. The distance between the cart wheels was close to four feet, eight and one-half inches. When coal mines opened in the north east of England this Gauge between the rails continued to be used



The distance of four feet, eight and one-half inches was used by George Stephenson for his early railways. Eventually this was adopted as the standard gauge for railways in Britain. This helped when all the different railway companies began to join their tracks together.

Many other countries around the world also used Standard Gauge.

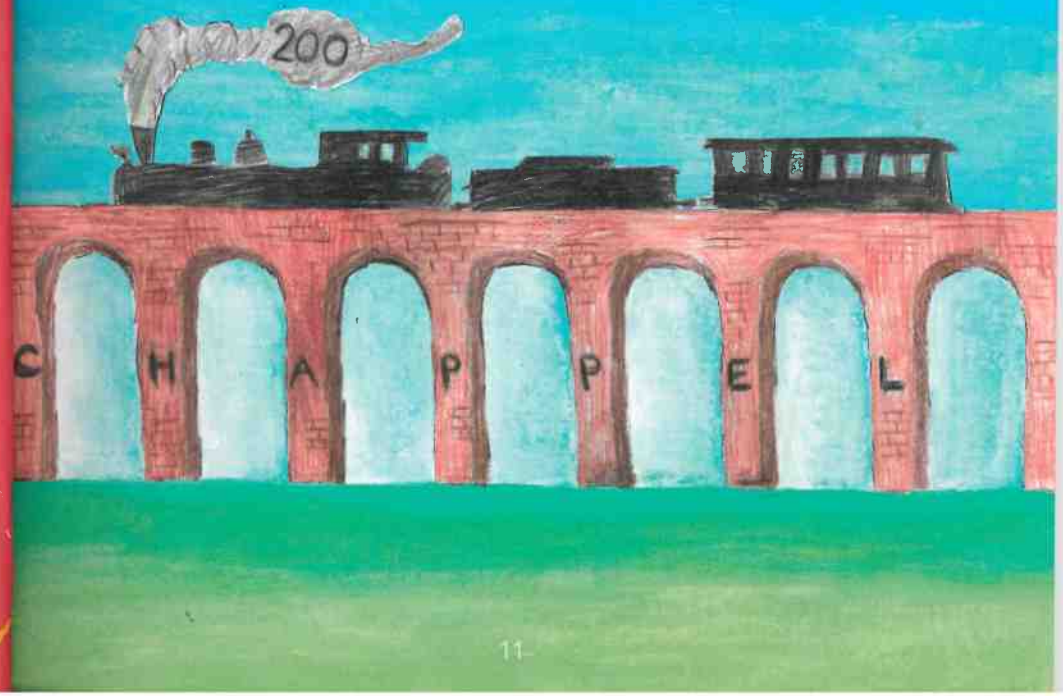
Trains Don't Like Steep Hills

George Stephenson realised that if trains had to climb up hills they would go much slower. He learned that railways should be kept as level as possible. Stephenson looked at how the canals had been built in the old days.

If you came to a hill you cut through a tunnel or a cutting (which is a tunnel without a roof). If you came to a valley you built an embankment or a viaduct.

If you came to a river you built a bridge. All this digging and building kept the railway as flat as possible.

Chappel Viaduct in Essex is one of the biggest railway structures. It crosses the valley of the River Colne and is 23 metres high. It was built in 1847 using 7 million bricks.



The Grandest Railway Bridge is the One Across the Firth of Forth in Scotland

The Forth Bridge

The Glenfield Tunnel

When it opened in 1832 it was the longest steam railway tunnel in the world at just over one mile long. Designed by George Stephenson, it was built between 1830 and 1832 under the supervision of his son Robert.

The First Time Queen Victoria Travels by Train

Queen Victoria was the first British monarch to travel by train going from Slough to Paddington in the newly-built royal railway carriage. On the 13th June 1842 the Queen and her family took a horse-drawn carriage from Windsor Castle to nearby Slough railway station.

There they boarded the royal saloon carriage, specially designed like a grand palace. The Times newspaper said... "it had a padded silk ceiling, blue velvet sofas, matching silk curtains, fringed lampshades, fine mahogany wooden tables and thick carpets."

The Royal Train was pulled by the steam engine Phlegethon and it took only took twenty five minutes to travel the 18 miles to Paddington Station.

Queen Victoria worried that the normal speed of over 43 miles per hour would affect her health, so she insisted that her trains never went more than 30 miles per hour.

The Queen was really pleased with her first journey and went on to make many more by rail, including annual trips to Balmoral Castle in Scotland.

Railway Mania

As railways spread across Britain many people wanted to use their savings to buy shares in the new railway in the hope of becoming rich.

Railway Mania reached its peak in 1846 when 263 new railway companies were given Government permission to build, the proposed routes totalling 9,500 miles.

Railways were promoted as a foolproof venture so thousands of people, some on modest wages, brought large numbers of shares. As the prices of railway shares increased, people became greedy and spent even more money. This continued until the Government said "Stop" and the share price collapsed. Lots of people lost all their money.

About a third of the railways authorised were never built—the companies either collapsed because of poor financial management, were bought out by larger competitors before they could build their line, or turned out to be fraudulent (scam) enterprises.

Businessmen like George Hudson developed many new routes in the North and Midlands by joining together several small railway companies. He was also a Member of Parliament, but eventually he failed as a railway promoter because of his fraudulent practices.

Where Do You Like to Sit on the Train?

In the early days of railways there were three Classes of railway carriage in Britain: First Class, Second Class and Third Class.

The Third Class was open trucks with wooden seats, which the longer you sat on them the harder they seemed. When it rained you got wet. Second Class had roofs and padded seats but were open at the sides. First Class was the best accommodation with compartments containing soft furnishing and window glazing. First Class was expensive so that only wealthy people could use the best carriages.

First Class Carriage

Third Class Carriage

Railway Tickets

At first train tickets were written out on paper which could cause long queues at busy stations. The system was needed to record how much was paid in fares at each station. A faster process was needed.

A new type of railway ticket was introduced in the 1840s and named after its inventor Thomas Edmondson. The tickets were printed on small pieces of card and remained in use until the 1970s.

Edmondson Ticket

1950s Platform Ticket, often used by Trainspotters

A 1990s British Rail ticket

Railway Time

Before the railways came along our town hall clocks were set to Local Time. When it was midday in London it was only 11:45 in Cardiff. This is because Cardiff is 150 miles west of London and the Sun rises and sets later. This did not matter then because it took 2 or 3 days to travel between these cities by horse.

This all changed with the introduction of the railways. Travel was much faster and you could travel from London to Cardiff in about 3 hours. When you arrived in Cardiff you had to reset your watch to Cardiff Time. In November 1840 the Great Western Railway (GWR) began to use Railway Time on all its stations. By 1848 most towns and railways were using "Railway Time" which was set by the Greenwich Observatory and also known as Greenwich Mean Time (GMT). GMT is still used today as a reference point throughout the world.

Annual Summer Holidays by Train

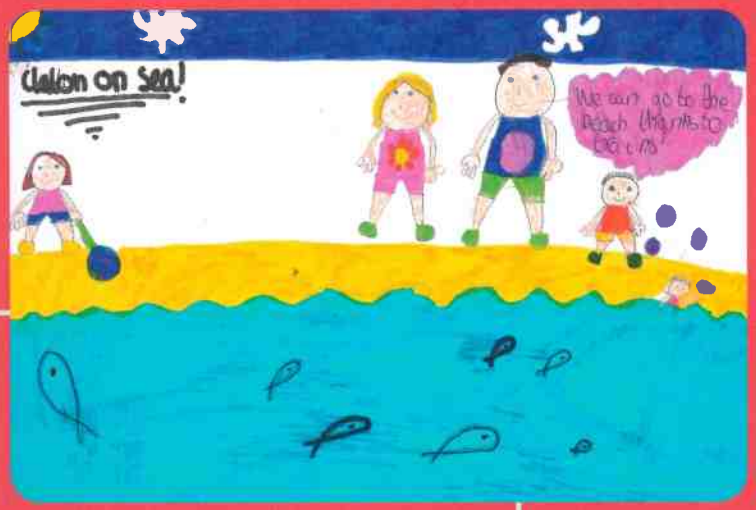
Following the rapid growth of the railway network in the 1860s/70s Seaside resorts such as Clacton, Southend-on-Sea, Great Yarmouth and in the north Blackpool and Scarborough began to grow.

The increasing popularity of the seaside can be seen in the building of the pleasure gardens and piers. Southend-on-Sea pier is one of the longest and has its own railway.

In the north, in the summer, the mills and factories were closed for a week's maintenance. The workers were given an unpaid holiday and this was known as ***Wakes Weeks***. The towns would empty as everyone went to the seaside.

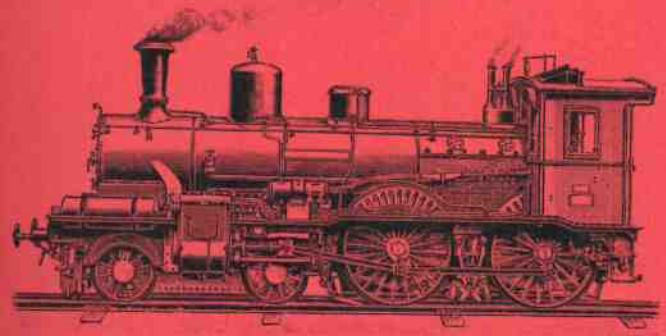
Probably the high point for holidays by train was the late 1950s and early 1960s. One weekend in Lancashire in the summer of 1962 saw 31 special trains leaving Bolton. Destinations included Newquay, Heysham (for the boat to Northern Ireland), Bournemouth, London (St Pancras), Paignton, Plymouth, Yarmouth, Holyhead, Eastbourne and Portsmouth.

The railway companies saw this as an opportunity to get more people travelling by train. They began to produce large posters which showed families on the beach and visiting places of interest.



The man who gave his name to travel firm Thomas Cook has been remembered at an event marking its 175th anniversary

The company ran a steam train to mark its first-ever excursion organised by Mr Cook. It was 1841 when Mr Cook arranged for a train to take 500 people at a shilling (5p) a head on the 12 miles from Leicester to Loughborough. Ex-Baptist preacher Mr Cook wanted people to attend a temperance meeting which promoted abstinence from alcohol.



How Do You Prevent Trains Crashing Into Each Other?

Trains need quite a lot of time and distance to come to a stop. The faster they go the longer distance they need to stop. The train driver controls the speed of his train. He needs to know what is ahead of him so he can slow down in good time and avoid running into the train in front.

Signals are placed next to his track and they will tell him when to slow and stop. He ***MUST*** do what the signal tells him.

Why are railway signals different from road traffic signals?

On early railways the red light was also at the top. If it snowed heavily the snow could pile up on the hood of the middle light and the red light could no longer been seen by the drivers. This cannot happen with the red light at the bottom.

Traffic lights have the red light at the top.

Railway signals have the red light at the bottom.

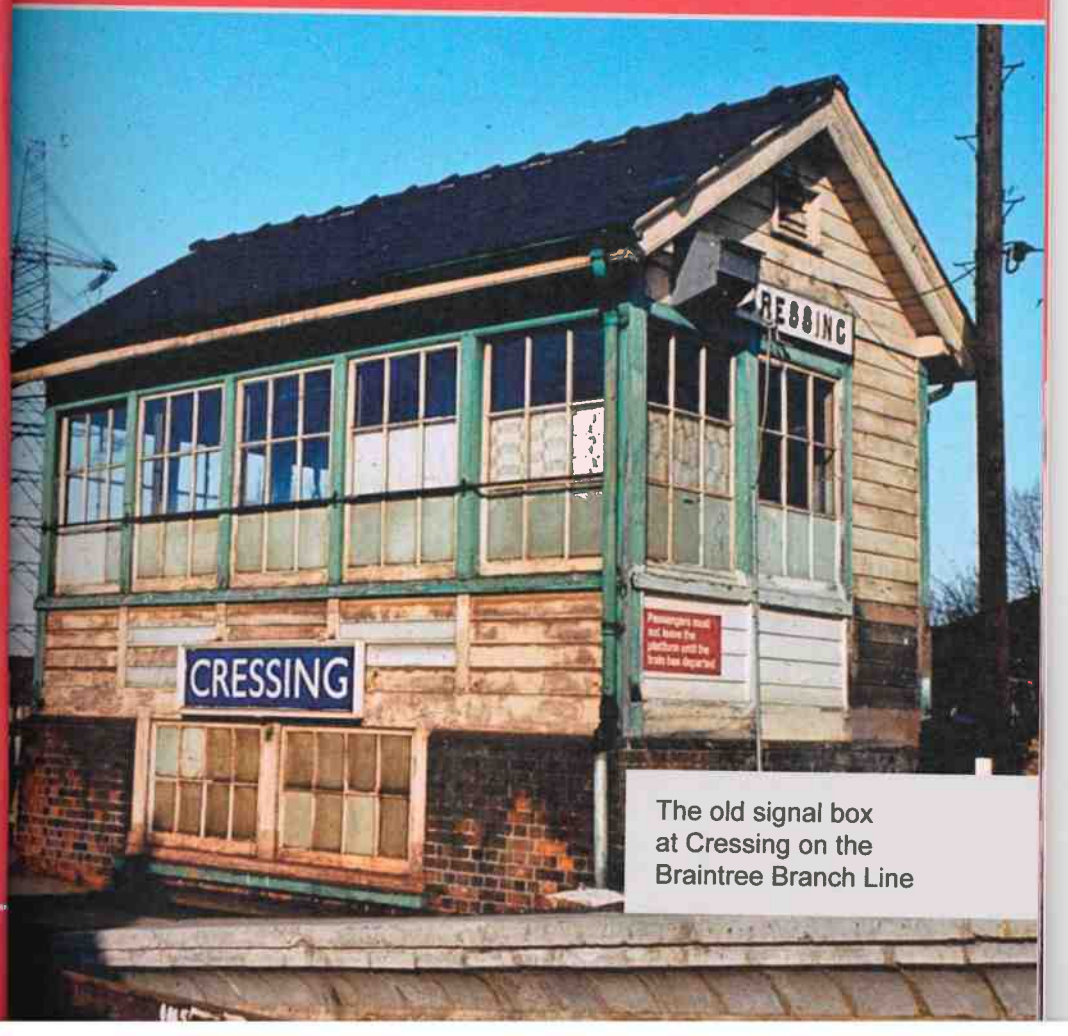
GREEN means All Clear to the next signal.

YELLOW tells him to slow down and prepare to Stop

RED tells him to Stop

When Rocket was pulling trains there were no lineside signal posts and the drivers had to look out for signalmen waving red or green flags. In these days the signals are controlled by a signalman who works in a Signal Box or Control Centre.

In the future all trains will be controlled by computers and the information will be sent directly to the driver's cab. Lineside signals will no longer be needed.



The old signal box at Cressing on the Braintree Branch Line

The Travelling Post Office (TPO)

The first ever letters to be carried by a train were on the Liverpool and Manchester railway on 11th November 1830. As the rail network grew so did the number of letters and parcels carried.

A Travelling Post Office (TPO) was a special postal train. There were no passengers and the letters and parcels were sorted while the train was speeding towards its destination.

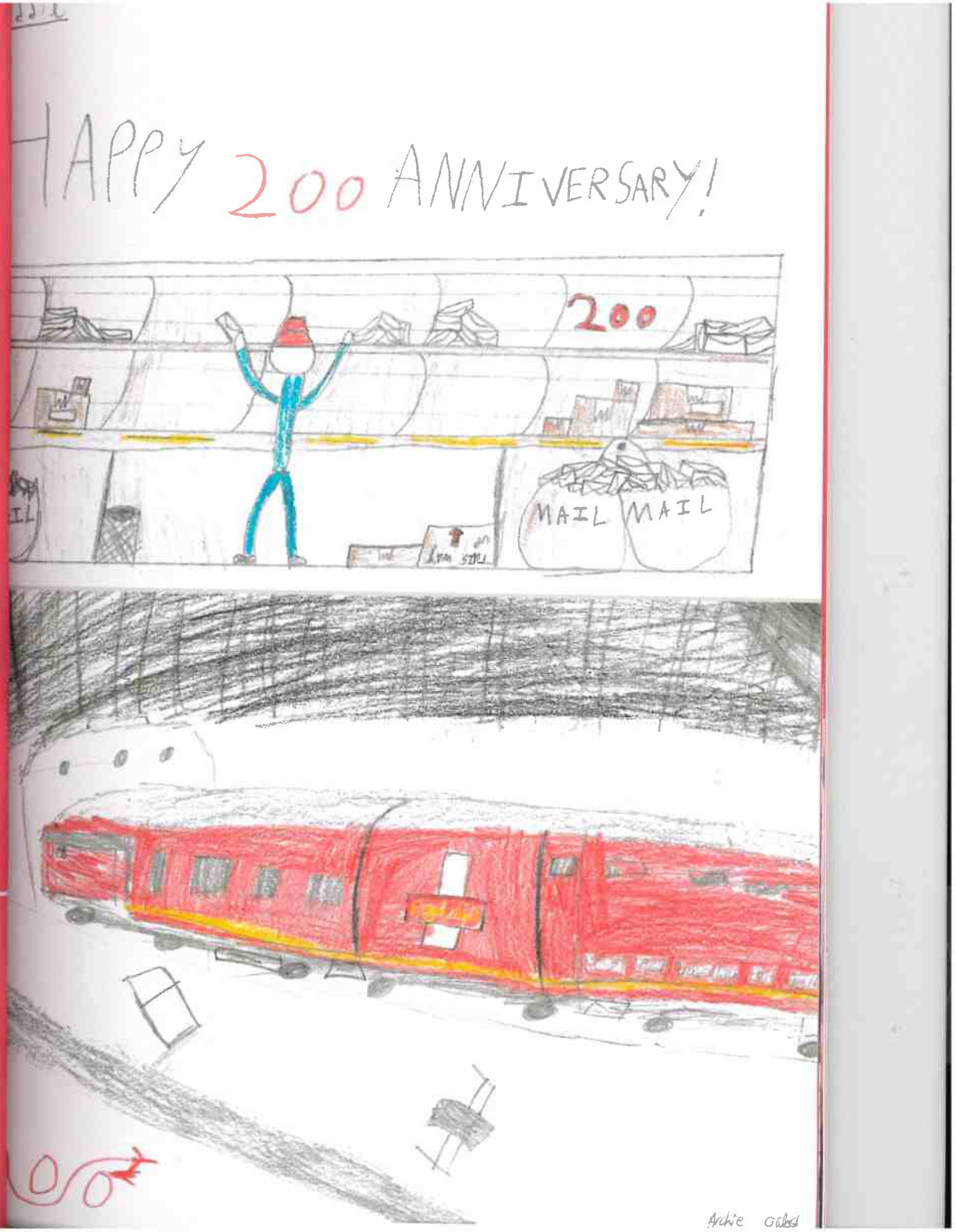
The first mail trains were very slow because they stopped at lots of stations. In 1852 equipment was designed that could collect and drop mail from a speeding train. To collect the mail a large leather pouch was hung on a post next to the track. The train had a net fixed to its side and this would scoop up the letter pouch as the train sped by. To drop off mail the pouch was hung off the side of the train and was scooped up by a net next to the track.

As soon as some new letters were picked up by the train the postmen would sort the letters into a rack where each town had its own little box known as a "pigeonhole" and these would be dropped off later in the journey.

TPO trains ran between London and Scotland, Cornwall, Wales and Norfolk. This bag drop equipment was used until 1971.

In 1936 a film was made about TPO trains. It was called Night Mail and includes some famous verse by W.H. Auden. Here are the first few lines which you read to the beat of the speeding train.

This is the Night Mail crossing the border,
Bringing the cheque and the Postal Order,
Letters for the rich, letters for the poor,
The shop at the corner and the girl next door,
Pulling up Beattock, a steady climb -
The gradients against her but she's on time.



Too Many Small Railways

By the 1920s there were too many railway companies. A few were quite large and made money. But there were dozens of small companies that were losing money.

The Government decided the railway system needed reorganising and in 1923 they introduced the "Grouping Act" which joined up all the small companies with one of the Big Four. The reorganisation was intended to make the trains run more reliably and able to make a profit.

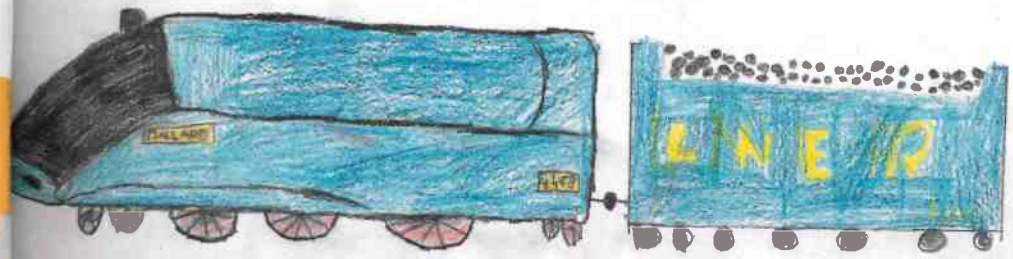
1923 The Grouping

- London North Eastern Railway LNER
- London Midland & Scottish Railway LMS
- Great Western Railway GWR
- Southern Railway SR

The Mallard: New World Record for Steam

On July 3, 1938, the LNER Class A4 No. 4468 Mallard set a new world speed record for steam locomotives, reaching an impressive speed of 126 mph (203 km/h) on a downhill stretch of track at Stoke Bank, between Grantham and Peterborough.

Designed by Sir Nigel Gresley, the Mallard was a streamlined locomotive built for speed and efficiency. The Mallard's record still stands today, making it a celebrated icon of British railway history.



The Railways Help in Two World Wars

World War I (1914-1918): The railways were essential for moving troops, equipment, and supplies. At the outbreak of the war, the British railway network efficiently transported large numbers of soldiers to ports for them to get to the front lines. Railways also helped the movement of rations, coal, and other essential materials across Britain and Europe. The war saw the introduction of ambulance trains, which were mobile hospitals that transported and treated wounded soldiers. Additionally, the war effort led to a significant increase in the employment of women in the railway industry, as many men joined the armed forces to fight.

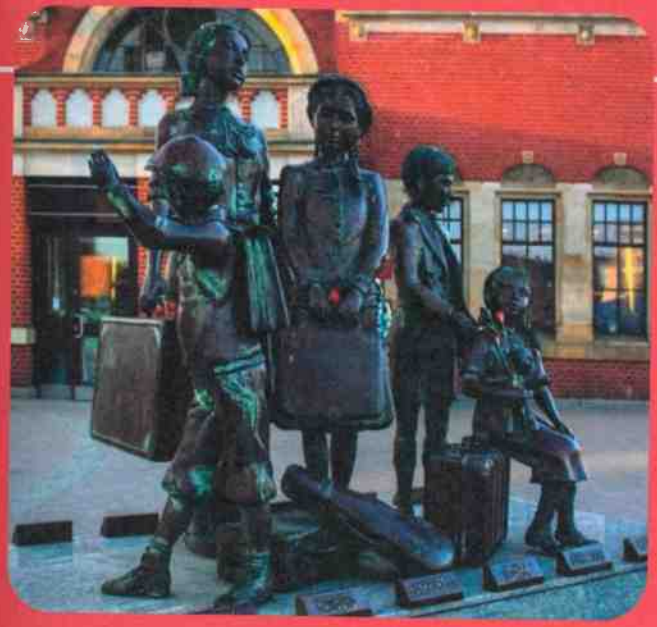
World War II (1939-1945): The railways again became a backbone of the war effort, despite suffering damage from German bombing raids. The railway also played a critical role in the logistics of the D-Day landings, moving troops and equipment to embarkation points.

Despite the challenges, the railways managed to maintain operations and support the war effort significantly.

Kindertransport: Children Rescued by Trains

The Kindertransport was a rescue mission that took place between 1938 and 1939, aimed at saving Jewish children from Nazi persecution.

In November 1938, the British government agreed to allow the entry of unaccompanied Jewish children under the age of 17. Nearly 10,000 children, primarily from Germany, Austria, Czechoslovakia, and Poland, were transported to the UK, where they were placed in foster homes, hostels, schools, and farms. The first group of children arrived in Harwich, Essex, on December 2, 1938.



Many of these children never saw their parents again, as most of their families perished in the Holocaust. The Kindertransport is remembered as providing safety and a new start for thousands of children during a time of immense danger and upheaval.

The Government Takes Over Running the Trains

The nationalisation of the railways in Great Britain took place on January 1, 1948. On the stroke of midnight drivers sounded their steam whistles in celebration.

"British Railways" (BR) was born

The first aims were to repair wartime damage and modernise the locomotives, goods wagons and passenger coaches. In 1948 British Railways owned over 30,000 steam engines. Some of them were built when Queen Victoria was on the throne. Most of the large express engines were built in the 1930s.

In 1955 BR announced ***The Modernisation Plan***. This plan aimed to replace steam locomotives with diesel and electric ones which would improve speed, require less maintenance and be cheaper to run.

New diesel powered locomotives were designed from small shunting locos up to very powerful express locos called Deltics. Passengers and drivers viewed the new diesels as a modern and clean form of transport.

The last steam engine was built in 1960 at Swindon Works. It was a 9F heavy freight engine named Evening Star and it can be seen in the National Railway Museum at York. Thousands of old steam engines were cut up for scrap. About 400 have survived and many can be seen working today on preserved railways lines such as the Bluebell Railway and the Watercress Line.

1963: The Beeching Report is Published

Dr Richard Beeching was appointed to oversee a period of great change. Dr Beeching's report was known as ***"The Reshaping of British Railways"***. His report aimed to address the financial losses of British Railways by recommending the closure of underused and unprofitable railway lines and stations. Over 2,000 stations and 5,000 miles of track were marked for closure.

The report led to major reductions in the railway network, particularly affecting rural areas such as Norfolk and Lincolnshire. Beeching becomes a hated figure for many, while others see him as a necessary moderniser.

The Government Minister who asked Dr Beeching to make his report was Ernest Marples. Marples was part of the family which owned a major civil engineering contractor – Marples Ridgeway. This contractor made a lot of money from motorway construction and this does raise the question if this motivated Ernest Marples in his drive to close a lot of the rail network. Nowadays, this conflict of interest in a Government minister would be called out, but in the 1960s it went largely unnoticed.

60 years later some of closed lines are badly missed. In Essex a line used to run from Witham to Bishops Stortford. Now it only goes as far as Braintree. Had the line not been closed it would have provided a more direct route to Stansted Airport thus avoiding travelling through London.

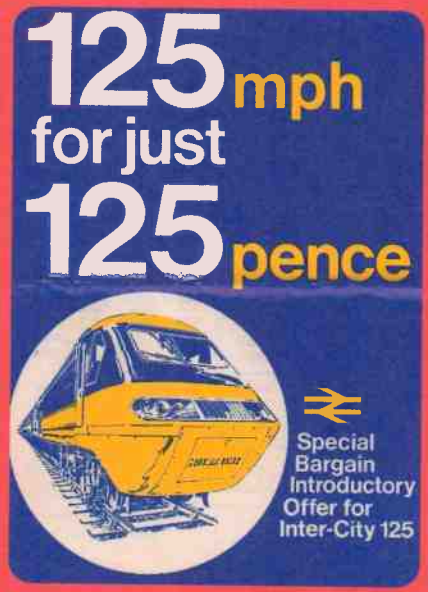
British Railways Gets a New Logo in 1965

The double arrow logo is one of the most well-known signs and is familiar to all railway passengers. The famous double arrow can be seen everywhere across the railway system. It appears on station signs, posters, on staff uniforms, train liveries and even on the cups and saucers.

The first logo used on locomotives by British Railways in 1950, known as the Lion and Wheel.

HST 125: The High Speed Train

High Speed diesel trains which ran at 125mph were introduced in 1976 to run from Paddington to South Wales. British Rail made a very special offer for a journey from Paddington to Swansea.



High Speed Train in York Museum. It is named after its designer Sir Kenneth Grange.

England and France Are Joined by a Railway Tunnel

In 1990 the British and French tunnel engineers meet under the Channel. On the 1st December 1990, they break through where the two tunnels meet and the engineers shake hands through the hole. Four years later the Channel Tunnel opens for rail traffic.

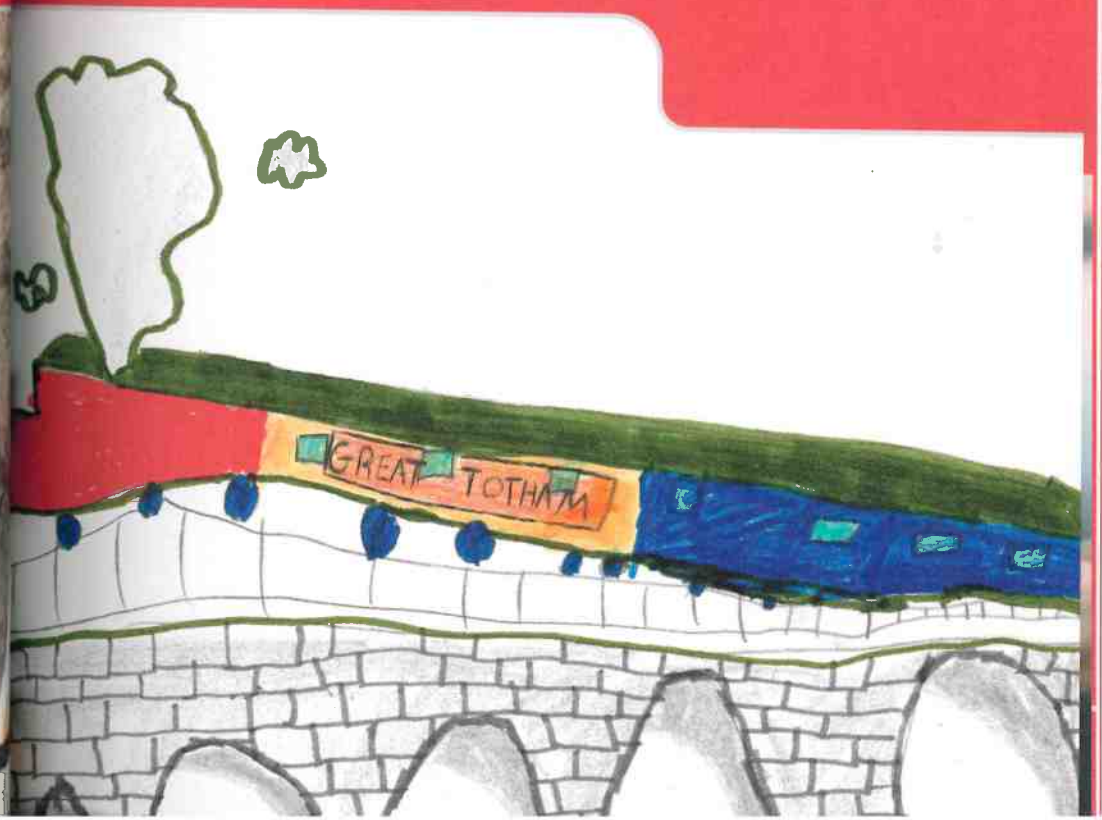
At its deepest point, the tunnel is 75 meters below the seabed and 115 metres below sea level. Journey time through the tunnel is approximately 35 minutes.

Government Sells the Railways to Private Companies

The Railways had been nationalised since 1948 but 40 years later they needed new trains and also to switch from diesel engines to electric from 25.000 volt overhead wires. In the late 1980s the Government wanted private companies to run the railways as they thought they would do a better job and have more money to invest.

British Railways was divided into 25 train-operating units and six freight-operating companies. Railtrack was created in 1994 to own and manage the track, signals, stations and land. Railtrack had a poor safety record and there were two major accidents where passengers were killed.

As a result Railtrack lost £534 million in 2001. The Government then formed a new not-for-profit company in 2002 called Network Rail Ltd.



Harry Potter Goes by Train

Everyone loves the Harry Potter stories. When the films were made they included scenes at Kings Cross station in London and on the famous McAlpine concrete viaduct in Scotland.

The old footbridge at Kings Cross is where Harry Potter was given his train ticket by Hagrid. Harry then joins others by running through the wall between platforms 9 and 10 to find the Hogwarts Express waiting.

The film also used an old Great Western steam engine No. 5972 and renamed it Hogwarts Castle.

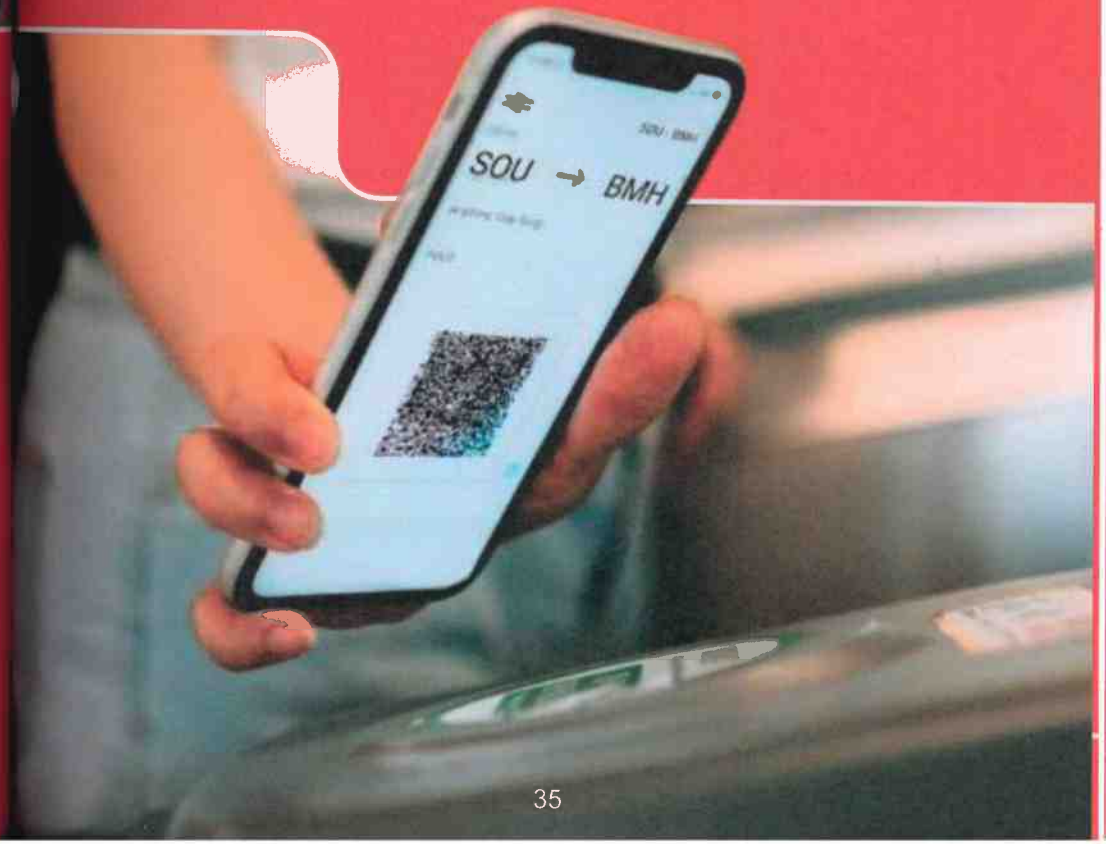
The 9¾ platform sign now lives in the York Railway Museum. The old Kings Cross footbridge can now be seen on the Watercress Line in Hampshire. In another film Harry and Ron Weasley miss the Hogwarts train at Kings Cross and have to use a flying car to get to Scotland where their vehicle is chased across the concrete viaduct by the steam train.

New Technology in the 2020s

During the Covid-19 pandemic the numbers of passengers using trains fell sharply as people were told to stay at home. By the time we celebrate Rail 200 passenger numbers are expected to return to the pre-Covid levels.

Technology such as on-train WiFi is now commonplace

If you have a Smart Phone you can download the Greater Anglia app and use it to buy tickets. The information on the ticket is contained in the QR code (see photo). This improves how passengers move through the ticket barriers at major stations. Lots of people still prefer paper tickets.



Greener Rail Travel

With everyone trying to do their bit to cut their carbon footprint, leaving the car at home as much as possible is a simple step which helps protect our valuable habitats and environment from harmful pollution.

Booking your train ticket in advance often gets you the best deal plus using e-tickets saves miles and miles of paper every year. A busy commuter train which people travel on from home to work daily can take up to 500 cars off the road.

This map shows the Essex and South Suffolk Community Rail Partnership branch lines.

Keep Safe When Travelling by Train

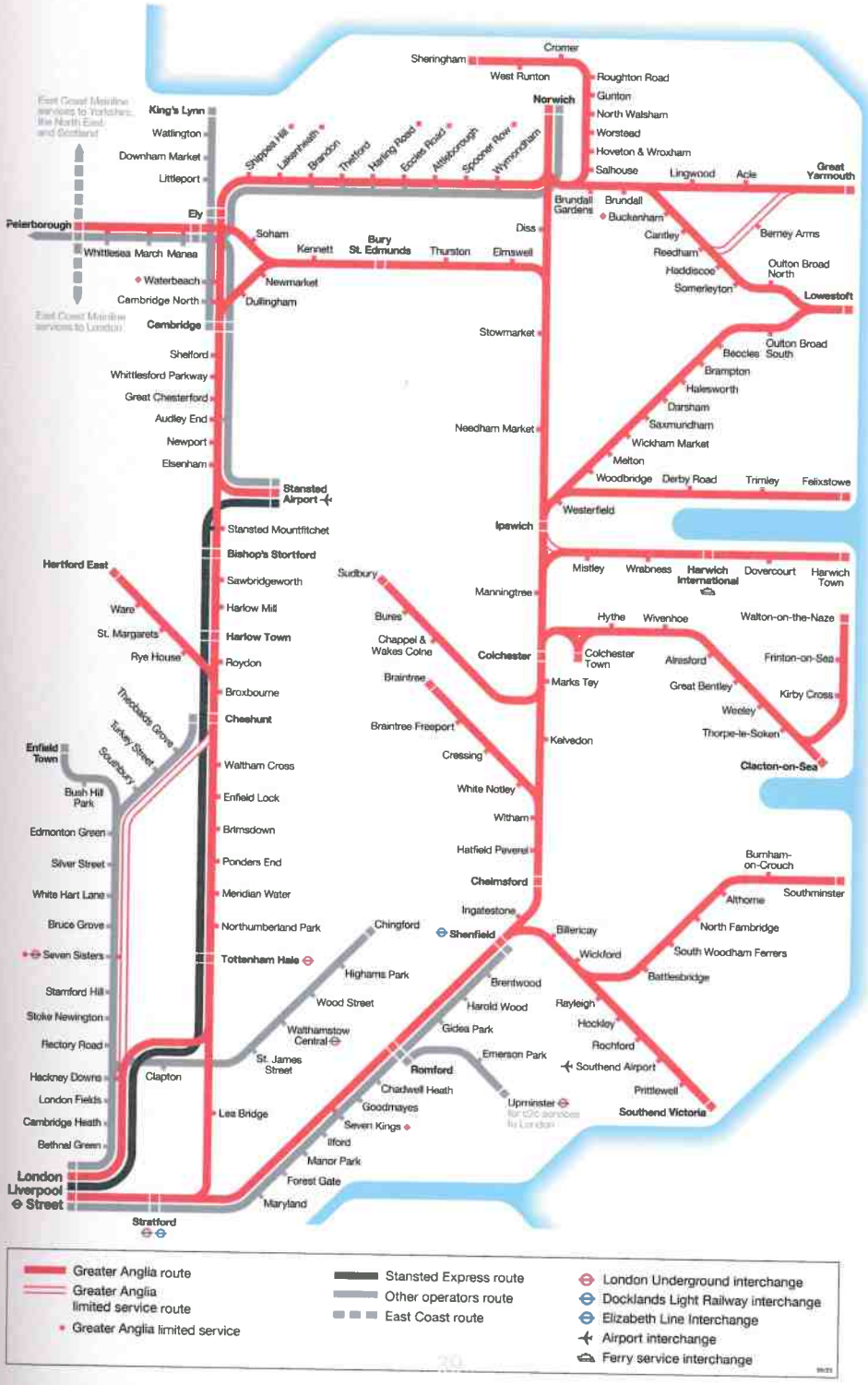
- ***Stand behind the yellow line away from the platform edge.*** A train can travel up to 120mph and creates wind which might push or pull you over if too close to the edge.
- ***When getting to your platform, always follow the passenger walkways around the station and use the footbridges, underpasses or foot crossing.*** Never go on the track. There could be electric conductor rails or overhead cables which power the train. These are always on and could seriously shock or harm you.
- ***If you drop something on the track – please leave it and report it to a station staff member or via the help point and they will tell you what to do. Stay on the platform.*** Never go on the track – you may get squashed. Trains are much quieter now and travel fast. A train is heavy so cannot stop quickly as the force keeps it moving. Trains can come from either direction at any time.

Community Rail

Essex and South Suffolk Community Rail Partnership (ESSCRP) was formed in 1998, with the aim to promote the six branch lines within Essex. It sits under a larger umbrella of the Community Rail Network and is fully supported by the Department for Transport, who see community rail as a vital link between the railway and the local community. Community Rail is a growing, unique grassroots movement, connecting people with their railways and station, delivering social, environmental, and economic benefit. ESSCRP works with Greater Anglia (GA) and helps support GA's Station Adoption initiatives, which has become very successful, with most of the 40 branch line stations having one or more station adopters. Many of these stations are unmanned so the station adopters not only improve the station environment but are also the 'eyes and ears' for their station – a vital link for GA and ESSCRP.

Promoting the branch lines entails producing publicity material, promoting the lines on social media, and organising special event trains – such as the very successful Seaside Special trains which take a lot of excited families from Colchester to Walton-on-the-Naze to enjoy the coast for the day.

To find out about the many events throughout the year please visit: ***www.esscrp.org.uk/events***



Published By

Published by Essex and South Suffolk Community Rail Partnership. The children of Great Totham Primary School, Terling School and Maltings Academy in Witham in Essex have designed and drawn the pictures in this book.

The students have had a great time being part of the Rail 200 project.

Thanks and Acknowledgements

Rail Delivery Group
Network Rail
Greater Anglia
National Railway Museum in York
A big thank you to David Gibson who wrote the book

This book was funded by:

This book was funded by The Community Rail Network, an umbrella organisation for all the Community Rail Partnership groups in Britain. Community Rail is a government strategy and scheme that helps you get the most from your local railway. The scheme engages local people in various volunteer groups, projects and activities throughout Britain that help improve and promote local railway lines, and services.

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