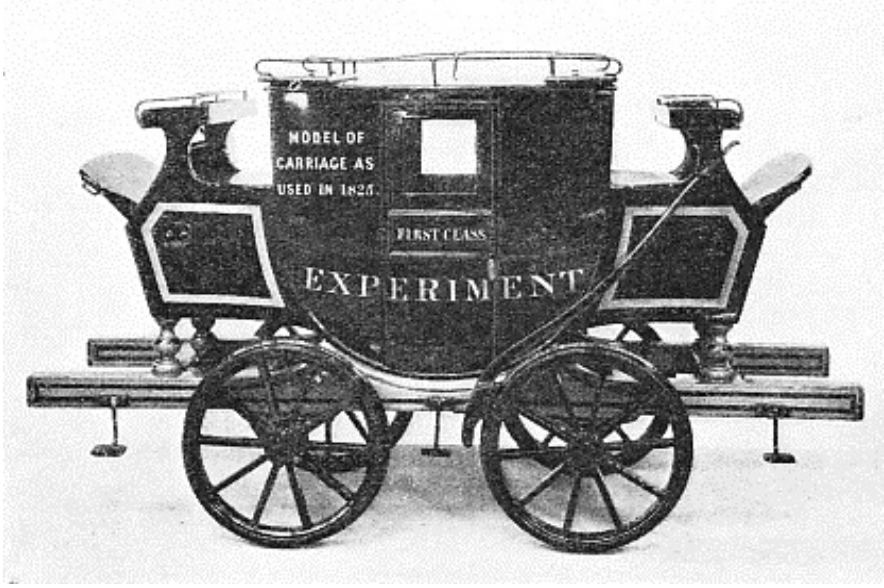
BLUEBELL RAILWAY EDUCATION DEPARTMENT

4a. The development of the railway coach

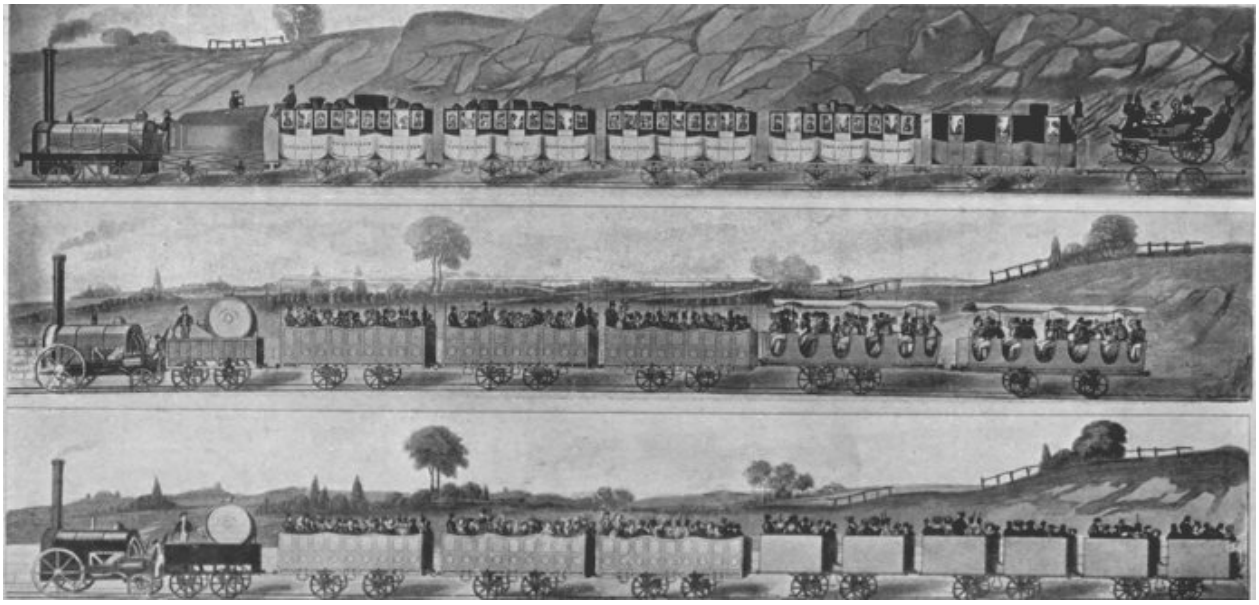
1. The earliest form of railway coach resembled the stagecoach as can be seen from the coach “Experiment” which operated on the Stockton and Darlington Railway in 1825, the UK's first public railway.



2. Some ten years later, following the opening of the Liverpool and Manchester Railway in 1830 the stagecoach resemblance can still be seen in this replica of a 1st class coach from 1834. At that time first and second class were enclosed, with first class having upholstered seats. Third class passengers (who travelled outside on a stage-coach) were only provided with benches in open wagons.

Reproduced with the kind permission of the National Railway Museum

3. Dating from 1837 the following engraving shows trains on the Liverpool and Manchester Railway. Firstly a passenger train of first class coaches with a Royal Mail coach and, at the rear, a private coach mounted on a truck, secondly, a train of second class coaches and, thirdly a train of third class coaches.



Liverpool and Manchester Railway 1835

4. As the years went by, greater comforts were added. Third class passengers were accommodated inside the coaches, and six-wheeled coaches, giving a smoother ride than the older four-wheeled types, were introduced.

5. Heating was however primitive and, initially, passengers had to hire hot-water bottles and blankets at stations, later it was provided using steam from the engine. To improve safety, trains started to have "continuous" brakes on all coaches, controlled by the driver, rather than just a hand brake controlled by the guard, and a "communication cord" by which passengers could raise an alarm in the event of an accident or incident on the train.

6. Lighting was originally by oil lamp with the lamp inserted through the roof as can be seen below. The light produced however was very dingy and gas lighting soon replaced oil, however, after some horrendous fires following accidents the railways started to use electric lighting in the late 19th century

7. By 1900 "Bogie" coaches were being introduced, the type of coach we know today, which are carried on a small 4-wheeled "bogie" at each end, these provide a much smoother ride. This example can be seen on the Bluebell today.

A Metropolitan Railway "Bogie Coach"

8. Second class travel was abolished in the early years of the 20th century, with the exception of trains to the channel ports for ferry services. Thus most trains carried only first and third class coaches until 1956 when third class was re-named second and then, in 1987, standard class, as seen on the main lines today.

9. The 1920s saw the production of high quality Pullman dining, cars serving high quality meals to passengers, as can be seen on the Bluebell's Golden Arrow dining car train today.

Pullman Car "Fingall", built in 1924

10. By the 1930s standard third class coaches were being produced to a high standard, including comfortably seating and toilet facilities. The coach below, which was introduced by the Southern Railway in 1935' can be seen running on the Bluebell today.

Southern Railway "Maunsell" Coach from 1935

11. Following the nationalisation of the railways after the Second World War the nationalised British Railways started to produce steel bodied coaches, many of which ran on the main lines until the last decade of the 20th century. They can be seen on many trains on the Bluebell today.

British Railways Mark 1 Coach from 1960

12. During the early 20th century older railway coaches were also put to another, and perhaps surprising, use during the early 20th century when they were bought and converted into holiday accommodation, often at the seaside or used in gardens as either extra accommodation or as sheds.

This former "Stroudley" coach below was found in the garden of a property in West Sussex.

13. A number of such coaches, including the one below, have since been rescued by the Bluebell and restored to running condition.

London, Chatham & Dover Railway carriage of 1889 was used as a bungalow from 1926

14. Further information about our coaching stock can be found on our historical website – www.bluebell-railway.co.uk

www.bluebell-railway.com

BLUEBELL RAILWAY EDUCATION DEPARTMENT

4b. Railway Tickets

1. When railways began operating in the 1830s passengers were given handwritten tickets, following the system used by the stagecoach companies at that time. However, not only was this laborious and time consuming but the increase in passenger numbers meant that long queues were common at busy stations. A faster means of issuing tickets was needed.

2. At the same time, given the number of tickets being issued there was a need to number tickets so as to ensure that ticket clerks didn't issue a ticket but then steal the fare paid. By this means, at the end of each day, the railway company could count the number of tickets sold and check that the right money was in the till.

3. Thomas Edmondson invented a suitable system and it was first used on the Manchester and Leeds Railway in the 1840s, before being adopted by other railway companies. The Edmondson tickets, which were cut out of thick card, successfully enabled the railways to accurately record the payment of railway fares and to account for the revenue raised.

A Bluebell Railway "Edmondson" ticket

4. The Bluebell Railway has a number of Edmondson printing machines, these are used to produce all tickets issued to passengers. Before issue these tickets are kept in racks in the Booking Office at each of the stations on the railway.

5. Passengers buy their ticket from the Booking Office at the station before starting their journey, telling the Booking Clerk:-

- how many people are travelling
- the name of the station to which they want to travel
- whether they want to travel first class or third class (on main line trains today third class is called standard class)

6. The Booking Clerk selects the correct ticket from the rack and stamps it using a special machine, which shows the date on which the ticket was issued.

A ticket dating machine

7. At the entrance to the platforms on the station the ticket will be checked by the porter on the barrier to ensure that it can be used on that day. If correct the ticket will be clipped or punched by a hand tool that takes a piece out of the ticket – either a “v” shaped piece if a clipper or a hole if a punch.

8. On the train the ticket may again be checked by a travelling ticket inspector to ensure that the passenger is sitting in the right seat, only passengers with class tickets are allowed to use first class seats.

9. Further information about our ticketing system can be found on our historical website – www.bluebell-railway.co.uk

BLUEBELL RAILWAY EDUCATION DEPARTMENT

4c. The Victorians

1. Arguably the 19th century was one that saw the greatest innovations of all time, largely down to the invention of the steam locomotive and the development of the railway network. On land it was trains that facilitated the distribution of food and the development of mass production as well concurrent improvements in means of communication. In 1800 the fastest speed at which you could convey news over any distance was around eight miles per hour – on horseback. By 1900 it was possible to send messages instantly by use of both the telephone and the telegraph.

2. Before the advent of the Victorian age in 1830 it was difficult, if not impossible, for the ordinary person to travel around the UK and many people thus spent their entire lives in the village in which they were born. For the rich, horseback was a possibility, but covering large distances necessitated frequent changes of horse and until the advent of the stagecoach there was no system in place for doing this on any scale.

3. The only means of mass inland transport available were the stagecoach and, to a much lesser extent, the canal boat, but the number of people that either system could accommodate was limited. On top of that the canal system was circuitous and slow while the roads generally were in poor condition and travel was often long and arduous. This was particularly the case for passengers who couldn't afford to pay for seats inside the stagecoach and were forced to travel on top, exposed to the weather.

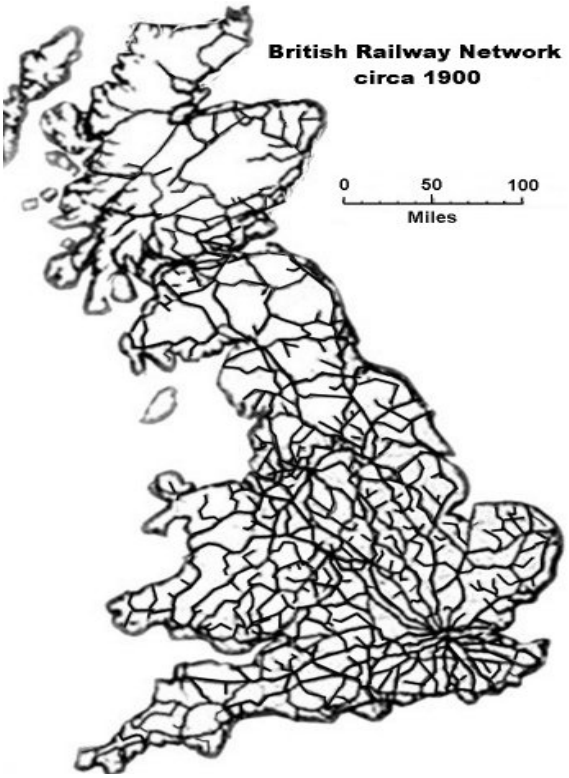
4. The advent of rail travel in the 1830s changed all that following the opening of the Stockton and Darlington Railway in 1828 and the first inter city line, between Liverpool and Manchester in 1830. The following 80 years saw the spread of railways throughout the UK and less than 20 years after the opening of the Liverpool to Manchester line it was possible to travel from London to Scotland by train in a fraction of the time that was possible by road.

5. Building the new railway network brought about huge increases in employment, arising both from the work of building the railway lines and as a result of the industrial revolution that they helped to bring about. It wrought huge changes in the physical environment of the countryside, with bridges,embankments, viaducts and tunnels altering the known landscape imeasurably and in the towns with the construction of new factories and houses for the workers.

6. The mid nintheenth century saw not just a huge increase in the number of people travelling including, for the first time, the lower working classes. This, in turn, created a demand for new seaside resorts catering for family summer holidays.

7. At the same time this new system of travel brought about significant social change in other respects, enabling, for example, women to travel without the need to be chaperoned albeit . Queen Victoria herself travelled by rail for the first time in 1842.

8. By 1900 Great Britain had some 22,000 miles of track, leaving only the most isolated areas any distance from a station. The extent of the railway network can be seen from the following diagram.



9. The spread of the railways also brought about the introduction of a UK wide system of timekeeping. Prior to that local time often differed from one town to another, for example the time in Bristol was 15 minutes behind that in London but such differences made running a railway service difficult and the railways soon introduced what became known as “railway standard time”. This was based on London time, that is the time set at Greenwich by the Royal Observatory and known as “Greenwich Mean Time”. The Greenwich Meridian passes through Sheffield Park Station on the Bluebell line and marked at the north end of platform 1.

10. In all of this the Government played very little part, with the development of the network being left entirely to private companies – in Sussex this generally meant the London, Brighton and South Coast Railway. The Government were however forced to intervene in three key areas:-

- safety, with the setting up in1840 of the Railway Inspectorate to inquire into the causes of accidents and to recommend ways of avoiding them

- to ensure that train travel was available to all by requiring every railway company to run at least one service a day on every route at a speed of not less than 12 miles per hour, with covered carriages provided with seats and a fare of not more than 1d per mile. These became known as “Parliamentary Trains”.

- to ensure that there was a uniform British gauge - the distance between the rails. It was decided that Stephenson’s gauge of 4ft 8and a half inches (1,435mm) should be chosen rather than Brunel’s 7ft and a quarter (2,140mm) so obviating difficulties when railways operating different gauges met.

11. By the end of the Victorian age the Railways were facing competition from local tram systems and this was followed after the end of the First World War by the development of both passenger and freight road transport. This severally affected the number of passengers and the quantities of freight carried and led to a steady programme of closures of lightly used lines.

12. This culminated in the rapid expansion in the number of private cars after the Second World War and led to the large scale programme of line closures arising from the 1963 Beeching Report. Ironically the problems now being caused by the number of cars on the road has led to a revival in the number of passenger’s carried on the railways and the reopening of some lines previously closed.

BLUEBELL RAILWAY EDUCATION DEPARTMENT

4d. Prominent Local People

The Earl of Sheffield

1. The introduction of railways throughout Sussex was haphazard, financed by private companies with no central planning which left some parts of the county without any service, notably the area between the main London to Brighton line in the west and the London to Hastings line in the east.

2. Given the poor state of the roads at that time this left farmers in the substantial area in between with no easy means of getting their farm produce to the growing market in London. After a series of abortive schemes to fill the gap, local landowners and business men decided that they had had enough and determined to promote an independent railway. The group met on Saturday 30 September 1876 at the Star Hotel in Lewes High Street under the chairmanship of Henry North Holroyd the Earl of Sheffield and decided to promote a new railway line linking the county town of Lewes in the south to East Grinstead via Sheffield Park. The garden and parklands of the Earl's estate at Sheffield Park are now owned by the National Trust.

Rose Ellen Margaret (Madge) Bessemer

3. Madge Bessemer, the granddaughter of the famous Steelman Sir Henry Bessemer, lived on the Burchetts estate at Newick and was a prominent member of a number of local organisations and a member of Chailey Parish Council. Following British Railway's announcement of their decision to close the line she chaired a Fighting Committee to oppose the closure, albeit without success and the line was officially closed on 13 June 1955- in practice a strike meant that closure was brought forward to 28 May.

4. Determined to fight on Miss Bessemer undertook further research and discovered that a clause in the 1878 Act of Parliament authorising the line required the London Brighton and South Coast Railway to provide four services a day (Sunday included). That obligations had been inherited by British Railways and as the Act had never been repealed it followed that the closure of the line was illegal. Following a lengthy battle to prove this point British Railways were forced to re-open the line to passengers on Thursday 7 August 1957.

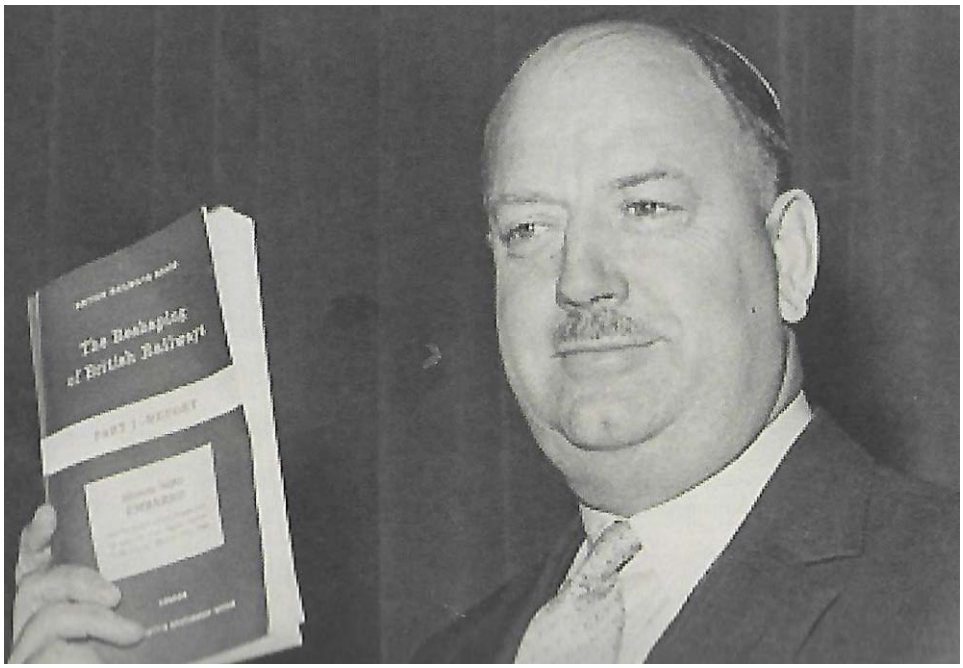
5. In this Miss Bessemer showed what could be achieved by a well organised and determined group of individuals although, after another public inquiry and following the repeal of the Act, British Railways sub sequentially obtained permission to close the line again with effect from Monday 17 March 1958. That extra year of service was however crucial in enabling the subsequent revival of part of the line as the Bluebell Railway

Lord Beeching

6. Given the efforts of the Earl of Sheffield in promoting the line and the efforts of Miss Bessemer to prevent its closer, it is ironic that it was another local man who was instrumental in closing large portions of the British Railways network – albeit not the Lewes and East Grinstead line, which had closed before his appointment as Chairman of the British Railways Board.

7. The then Richard Beeching, who lived just outside East Grinstead, was appointed by the Government in 1961 and charged with finding out whether the railways, which were losing millions of pounds a year, could be made to pay their way. He concluded that this could not be done without closure of many miles of line and, as a direct result of the report some 67, 000 jobs, 4,500 route miles and 2,000 stations were closed. In all, between 1963 and 1984 over 6,000 miles of line were closed – including the three Bridges to Tunbridge Wells via East Grinstead line.

8. Since that time of course the transport situation has changed and, with growing congestion caused by the number of cars on the road and the increasing population there are now moves afoot to re-open some of those closed lines and to build new ones.



9. Further information about prominent local people can be found on our historical website - www.bluebell-railway.co.uk

BLUEBELL RAILWAY EDUCATION DEPARTMENT

4e. Prominent Victorian Railwaymen

James Watt (30 January 1736 – 25 August 1819)

1. A Scottish inventor and mechanical engineer whose improvements to the stationary steam engine, which had been developed for use in mills, were the precursor to the development of the railway steam engine.

Richard Trevithick (13 April 1771 – 22 April 1833)

2. An English inventor and mining engineer who was to be an early pioneer of steam powered road and rail transport. On 21 February 1804 the world's first locomotive hauled railway journey was made, when his steam railway locomotive hauled a train along the tramway of the Pennydarren Ironworks in South Wales. At that time however the track was of poor quality and the locomotive was too heavy for the rails, as a result the experiment was soon terminated.

George Stephenson (9 June 1781 – 12 August 1848)

3. An English civil and mechanical engineer who built the first public inter-city railway line in the world to use steam locomotives – the Liverpool and Manchester Railway, which opened in 1830. His chosen rail gauge (the distance between the two rails) of 4ft 8and a half inches became the standard gauge" for railways throughout the world.

Robert Stephenson (16 October 1803 – 12 October 1859)

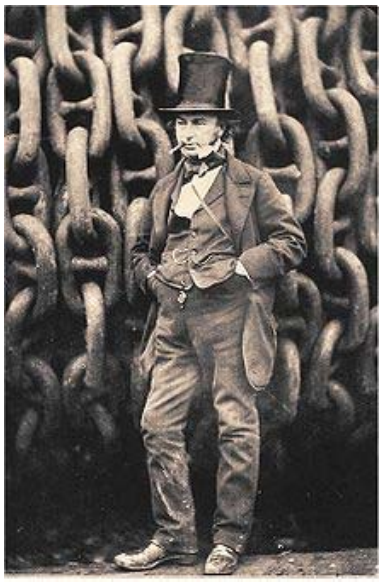
4. An English railway engineer and the son of Robert Stephenson, he built on the achievements of his father. He developed the steam locomotive "Rocket" which won the Rainhill Trials, which preceded the opening of the Liverpool and Manchester Railway and proved that locomotive haulage was a viable proposition for rail travel.

Robert Stephenson

Isambard Kingdom Brunel (9 April 1806 -15 September 1859)

5. An English mechanical and civil engineer who built the Great Western Railway (GWR), as well as dockyards and a series of steamships and whose bridge and tunnel designs revolutionised public transport and engineering.

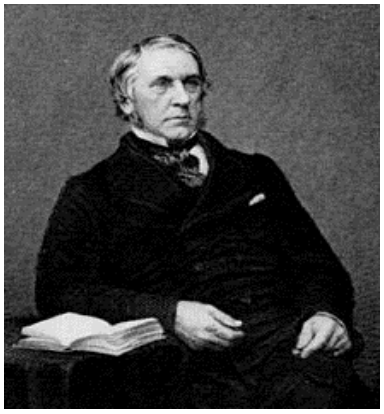
6. When designing the GWR, rather than opting for Stephenson's standard gauge of 4ft 8 and a half inches (1435mm) he chose was became known as "broad gauge" - 7ft and a quarter inches (2,140mm) – which provided for a smoother ride for passengers but which made construction more expensive and caused difficulties when it interconnected with railways using "standard gauge" track. Arising from these difficulties, in 1846 the GWR was forced to switch its whole network to "standard gauge"



Isambard Kingdom Brunel

Joseph Locke (9 August 1805 – 18 September 1860)

7. An English civil engineer of the 19th century who was assistant engineer to George Stephenson on the Liverpool and Manchester Railway. He became one of the major pioneers of railway development.



Joseph Locke

William Stroudley (6 March 1833 – 20 December 1889)

8. One of Britain's most famous steam locomotive engineers of the 19th century. He worked principally for the London Brighton and South Coast Railway and designed some of the most famous locomotives of his era, some of which have been preserved today.

Thomas Edmondson (30 June 1792 – 22 June 1851)

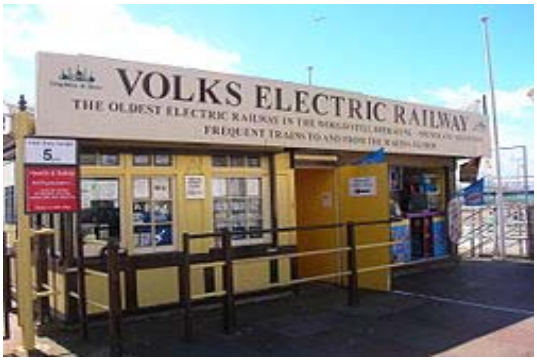
9. The inventor of the Edmondson railway ticket, a system which is still used on the Bluebell Railway today. This cardboard ticket, with serial numbers, replaced the earlier handwritten paper tickets and enabled railway companies both to cope with the numbers of passengers travelling and to improve financial control.

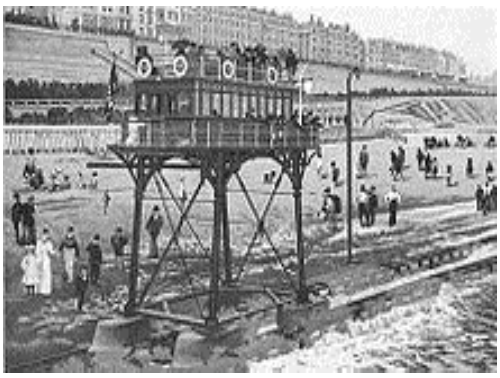
John Saxby (1821 – 22 April 1913)

10. An English engineer from Brighton who took a great interest in railway safety and, in 1856, invented a system for interlocking points and signals on the railway so as to prevent accidents. His system, which is used on the Bluebell Railway, has stood the test of time and forms the basis of railway signalling systems today.

Magnus Volk (19 October 1851 – 20 May 1937)

11. A pioneer British electrical engineer who was responsible for building the narrow gauge Volk's Electric Railway in Brighton in 1883 - the world's oldest extant electric railway. In 1896 he also built the unique, but short lived, Brighton and Rottingdean Seashore Electric Railway, with its unusual" Daddy Long Legs" vehicle. This ran along the seashore but was destroyed in a gale in 1901.





"Daddy Long Legs"

www.bluebell-railway.com

BLUEBELL RAILWAY EDUCATION DEPARTMENT

4f. The Lewes to East Grinstead Line In Wartime

1. The Lewes and East Grinstead Line was used extensively during both World Wars to transport both men and materials to Newhaven for onward transport to France and, in the Second World War, to bring troops home from Dunkirk. It provided an extremely useful diversionary route to the busy Brighton main line via Haywards Heath.

2. Horsted Keynes Station in particular became busier, a sawmill was set up in the goods yard to cut pit props (for supporting the roof in coal mines) while, in the village, a jam factory was opened and truck loads of oranges arrived to join the apples from local nurseries. So much jam was produced that a goods wagon full of jam was attached to a London train each day for the London market.

3. In addition, all sorts of railway or war stock was berthed in the sidings to the west of the station, including ship's propellers and ammunition. *A photograph showing this material can be seen on a display in the museum.*

Evacuation

4. During the Second World War the line also played its part in the evacuation of children from London. In anticipation of large scale bombing of the city, on Friday 1 September 1939 posters were put up telling parents that they must take their children to the nearest station so that they could be evacuated to the safety of the countryside. *One of these large posters can be seen in the museum.*

5. The children and their parents could not choose where to go and some children were taken as far away as Wales, although many were evacuated closer to home. The Lewes and East Grinstead line saw a number of evacuee trains which terminated at either East Grinstead or Haywards Heath, from where children were taken by bus to local villages to be billeted with families living in the area. *In the museum you can see a photograph of very young children, with name labels and gas masks, ready to get on a train and be evacuated.*

Cinder Hill Tunnel

6. Though attacks on towns and railway lines in Sussex were not common, a serious incident occurred on the Lewes and East Grinstead line on Wednesday 16 December 1942, just south of Newick and Chailey Station. In this case a German Dornier 217 bomber attacked the 1 20 pm train from Brighton to Oxted.

7. Between Barcombe and Newick and Chailey Stations the enemy aircraft dived to attack the defenceless train with its machine guns, whereupon the driver of locomotive D3, No. 2372 put on maximum speed in order to reach the short, 63 yard long, Cinder Hill Tunnel before it could be hit.. The tunnel, and the cutting in which it lay, proved to be just long

enough to shelter the three coach train and its passengers. There was however was some damage to the engine and coaches as well as injuries to some passengers.

Dornier 217 bomber

8. Travelling on the train were a party of young girls returning home from the Girl's Secondary High School in Lewes and when the attack occurred the girls tried to seek shelter under the seats, only to find this difficult due to the under seat heaters. No doubt they were also concerned about getting their school uniforms dirty on the floor. The most serious injury occurred to a Mrs Daisy Wilkins, who threw herself on top of a young schoolgirl in an attempt to protect her, only to be hit by a bullet and, as a result, losing the sight of one eye.

Lywood Tunnel

9. There was a similar incident later in the war, this time at Lywood Tunnel on the line from Horsted Keynes to Haywards Heath. In this case the engine crew spotted a low flying German aircraft pursuing the train and managed to stop it in the 216 yard tunnel, just before a bomb was dropped on top of the tunnel.

Lywood Tunnel

10. This was followed by another bomb being dropped on some cottages on the road to Lindfield, fortunately nobody was injured on either the train or in the cottages.

Horsted Keynes Station

11. Although there were only limited raids specifically on Sussex towns it was not uncommon during the Second World War for German aircraft returning from bombing raids over London to jettison any remaining bombs over the Sussex countryside en-route to their bases on the continent. In one such incident a returning German bomber jettisoned its load of bombs close to Horsted Keynes Station. One fell at the end of the station drive, blowing out a pond and making a large crater as well as blowing out most of the windows in the station. A second bomb fell in a farmer's field to the west of the station.

Horsted Keynes Station

12. During this period an air raid shelter was provided for the Horsted Keynes Station Master, while the staff used to take cover in the ticket office under the big long oak table that can still be seen today. Passengers had to make use of the subway between the platforms as an air raid shelter – a bench was provided in the subway for their use. *Use is made of the subway in this way today during the Bluebell's evacuation exercise for schools.*

13. A further incident involved a bomb being dropped onto the railway embankment near the Holywell waterworks to the south of Horsted Keynes Station, causing the line to be closed for two weeks – during the closure a replacement bus service ran between Horsted Keynes and Sheffield Park Stations.

14. In September 1940 a Luftwaffe Messerschmitt 109E fighter plane was shot down by an RAF Spitfire in combat over Ashdown Forest and the plane crashed into a pond some 1,000 yards from the railway line at Horsted Keynes. The Rev Eardley of St Giles Parish Church at Horsted Keynes made sure that the German pilot had a decent burial in the churchyard.

15. The railway line and the village had escaped again but no one, even in the rural countryside could ignore the war that was happening around them. *Details of this incident can be found in an article entitled "Wartime near miss for Bluebell Line" by Joan Gurr in Bluebell News - summer 2004 page 27.*

Wartime Memories of Kingscote Station

15. From February 1942 until July 1943 Sergeant Des Hickinbotham was a soldier in the Royal Army Ordnance Corps serving in an ammunition depot near Kingscote station. He later recalled his time there:-

"Before the war I would assume it was not a very busy station but wartime conditions changed that. It became a very useful station for consignments of ammunition and other military equipment to arrive for onward transmission to various Canadian and British army depots in the area.

The station was also the means by which the soldiers were able to get away from the isolated area and travel to East Grinstead, Brighton or London, where some of them had family." *A fuller version of this item can be found in Bluebell News- Summer 2010 page 29.*

Workers on the Railway

16. Many railway workers joined the army, navy and air force during the war as a result of which there was a shortage of workers to staff stations and support services. This led to posters being displayed encouraging women to work on the railways in order to fill the gaps. *One of these posters can be seen in the museum.*

A Wartime Tragedy

17. On the fateful afternoon of Saturday 31 July 1943 at 4 pm, Gunner Ronald Knapp of the Royal Artillery, aged 22, of 6 Church Avenue Haywards Heath and his bride, Corporal Winifred Standing of the Women's Auxiliary Air Force, aged 21, of Nobles Farm, Holywell were married at St Giles Church, Horsted Keynes. Gunner Knapp had returned home on 14 days leave in order to get married before going overseas. Tragically the young couple were to be married for less than five hours, before being run down and killed by the 7 34 pm train from Brighton to East Grinstead.

18. The wedding party had returned from the church to Nobles Farm, opposite Holywell Waterworks, for the wedding reception and at 7 50 pm the bridegroom's parents had to leave the reception in order to catch the Southdown bus to Haywards Heath. They were escorted to the bus stop by the bride and groom and because it was raining heavily at the time the bride's father lent the group two raincoats to protect them from the deluge. In order to reach the bus stop they decided to walk along the railway line, because the footpath though the field was so muddy. At about 8 20 pm the parents caught the bus, leaving the young couple to return to the farm alone.

19. The train left Sheffield Park Station at 8 32 pm in torrential rain and, as the train passed the Holywell road bridge the Guard looked out and noticed something lying on the track. On reaching Horsted Keynes Station the Guard and driver examined the train and, although there was no apparent damage, they found a raincoat on the front buffer beam of the engine. The line to the south of the station was searched and, tragically, the lifeless bodies of the young married couple were found lying beside the track. At the subsequent inquest the

Coroner concluded that the couple had been walking along the track with their backs to the train and with a raincoat over their heads to protect them from the rain. As a result they had not heard the train approaching.

20. The Rector of St Giles Church, who had married the couple only ten days previously, had the sad duty of burying the couple in the Churchyard where their graves can be seen to this day. *This tragic but true story reinforces the message that children must not trespass on railway lines.*

BLUEBELL RAILWAY EDUCATION DEPARTMENT