

THE VICTORIANS

& THE SPREAD OF THE RAILWAYS INTO SCOTLAND: A SHORT HISTORY

With the success of the Stockton and Darlington Railway and, then, the Liverpool and Manchester Railway, it became apparent that there was a future in the use of steam traction for commercial gain. At first the big profits came from the transportation of coal, with passengers being regarded as of secondary importance. However the early passenger railways had shown that there was a desire for this to be developed further and it was not long before Scottish towns and cities benefited from this revolutionary new form of transport.

The first true railway between towns in Scotland was the **Kilmarnock and Troon Railway**, established by an Act of Parliament on 27th May 1808. It first carried passengers in 1819. Prior to 1840 there had only been 289 miles of track laid in Scotland. In the year 1845 alone, 436 miles were laid and this became known as the year of “Railway Mania”. By 1866 Scottish track mileage had expanded to an impressive 2250 miles.

Edinburgh and Glasgow were connected during 1842, with a line between Haymarket and Queen Street opening on 18th February of that year and run by the **Edinburgh and Glasgow Railway** (the E&G was subsequently acquired by the North British Railway). The line was extended to Waverley station in 1846. By 1850, railway lines connected all the major towns.

There were five main railway companies in Scotland:

- The **Caledonian Railway** began in 1845 and in 1848 connected Glasgow with Carlisle.
- In 1846 Edinburgh was joined by rail to the English network by the **North British Railway**, which had begun its life in 1844. Its route to the South linked it with Berwick and then Newcastle.
- The **Glasgow and South Western Railway** was founded in 1840 with a line linking Glasgow with Ayr and with stations en route at Paisley and Kilmarnock.
- The **Highland Railway** began its life in 1855 with the opening of the Inverness to Nairn line. Its network of lines radiated south to Perth, north to Wick and Thurso, with its most westerly line reaching out to Kyle of Lochalsh.
- The **Great North of Scotland Railway** was founded in 1852 and served the North East of Scotland. Its centre of operations was based at Aberdeen.

CONQUERING NATURE

The Victorian age saw a number of great advances in railways in Scotland, most of which were civil engineering solutions to some of the natural barriers which stood in the way of direct routes between

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Scottish cities and towns. Two of the greatest of these barriers were the Firths of Tay and Forth, and it took great ingenuity, as well as tragedy, before both of these rivers were successfully bridged.

The first bridge across the river Tay was designed by the renowned engineer, **Sir Thomas Bouch**, and his design for a single track bridge was hailed as a great success when it was opened in 1878. However, on the stormy night of 28th December 1879, the central section of the bridge, known as the High Girders, was destroyed by gale force winds. A train carrying an estimated 78 people, including the crew, was travelling north from Wormit to Dundee and ploughed straight into the river, killing all on board. The subsequent inquiry found that the design and construction of some parts of the bridge had been inadequate and substandard and Bouch, his reputation as an engineer in tatters, was left a broken man for the rest of his life. A new, much stronger, bridge, this time double track, was opened in 1887 and still stands to this day. One of the twisted girders from the first bridge can be seen in the Museum of Scotland in Edinburgh and the piers from the old bridge still stand by the side of the new one.

The Firth of Forth was originally to have been spanned by a slender suspension bridge also designed by Bouch, which got as far as having its foundation stone laid, but, following the 1879 disaster, Bouch's design was scrapped. A new bridge based on the Cantilever principle was planned by **Sir John Fowler** and **Sir Benjamin Baker** and built between South and North Queensferry, being opened by the Prince of Wales in 1890. This bridge - which was the first such major structure to be built in Britain using steel, rather than the cast or wrought iron of earlier designs - was a triumph and remains one of the greatest achievements of Victorian engineering.

Civil engineering is not only confined to the building of bridges across rivers and in Victorian Scotland there were numerous examples of railway lines built along stretches which tested the ingenuity of the engineers, such as the Inverness to Kyle of Lochalsh line. The final stretch of this railway was, at the time of its construction at the beginning of the 20th Century, the most expensive railway line - per mile - in the country. To keep gradients shallow much of it had to be routed through cuttings, tunnels or embankments, with thousands of tons of rock being blasted away to make way for the track bed.

THE NAVVIES

In Victorian Britain, much of the work of laying railway lines had been done by labourers who worked with tools such as picks, shovels and barrows. Some of these men, who became known as navvies, had fled from the Great Irish Potato Famine of the 1840s to settle with their families and find gainful employment in the West of Scotland and other areas. Despite the spread of workers from Ireland, the majority of the navvies in the country (numbering around 250,000 in Britain at the height of the railway boom in the 1850s) hailed from the British mainland, with those who built lines such as the Kyle of Lochalsh extension coming mostly from the Highlands and the Western Isles. The building of the railways was a very labour intensive task, and the navvies were paid well compared to those who worked in factories - they could earn up to 25 pence per day! The navvies stayed in shanty towns, close to where they worked, however the death toll in certain areas, particularly where tunnels were being constructed, was high, with the widow of a dead navvy perhaps getting up to £5 compensation if she was lucky. As the 19th Century wore on, mechanical equipment, such as steam shovels, became more widely used, but

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the bulk of work was still done by hand. The crucial role of the navvies in the construction of the railways in Victorian Britain cannot be overstated.

A CHANGED WAY OF LIFE

The Victorian Era saw the growth of railways from a small system for transporting goods and passengers over relatively short distances into a country-wide inter-city network which revolutionised British life. One way in which this happened was the first use of a standard time system in Britain in 1847. Prior to this, each town or village had used its own local time. The coming of the railway meant that the time had to be the same throughout the network for the timetable to work. By 1855 the vast majority of Britain's clocks were standardised to Greenwich Mean Time (GMT) and those travelling could tell from a glance at their timetable exactly when a train would arrive or depart in any part of the country.

The ease of railway travel between Britain's ports and its major cities and towns led to a change in the diet of the country. Fish, which had previously been an expensive food in areas away from the sea, became a very important part of the diet in Victorian Britain because it was now possible to have it taken to market and then sold in shops while it was still fresh. Deep freezing of food was still some way off in the future and, in Scotland, the ability to get fish quickly to market was a great boost to towns like Kyle of Lochalsh, Mallaig and Oban. Special trains would often be run at short notice to allow for an extra-large catch of fish. At most other times a fish van or two would be sufficient, added to the end of a passenger train heading for the cities.

The railway was used to quickly transport other perishable items such as fruit or milk, with milk being carried in special metal churns placed inside wagons. Special ventilated vans were designed to help with the transport of goods which needed to be kept fresh. At first such loads had been carried in open wagons and covered with a tarpaulin, but the newer vans had roofs to protect the contents and extra ventilation louvres in the body to help keep the goods cool within. Meat, in the form of cattle, was at first largely transported live to the markets, but, from the 1870s, shipments of meat were more common, carried in ventilated meat vans. The result was that, as with fish, those living in Victorian towns were able to choose from a much wider range of fresh produce than before.

RAILWAY SAFETY

The growth of the railways in Victorian times also required greater safety measures to be put in place to protect passengers and the public. Since the 1840s it has been a legal requirement that all railways in Britain are fenced off from the public and many of the railway companies spent much effort on producing signage to warn people off their property. However, the most important of the safety measures has to be the development of a proper system of signalling. Early systems had involved trains running to set timetables and a watchman looking out for each passing train. This worked fine if all was running to time, however if the train was delayed after it had gone out of the watchman's sight there was no way to tell this had happened and an accident may occur.

On single track lines, tokens and tablets were used and the locomotive driver would be given a marked token in a leather pouch, which allowed him to travel over a stretch of line. There was only one token per

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stretch of line, which would be given to the signalman at the end of the single section. The token could then be given to the driver of the train coming in the opposite direction. This system worked very well and versions of this are still in use in some areas in Scotland, such as on the Stranraer to Girvan line. The invention of blocked, interlocked, signalling and the adoption of national standards for this system in the *1889 Regulation of Railways Act*, was a great advance in safety.

The signalling system was worked by a signalman from the signal box. These would be placed at points along the line, with each box controlling a number of signals and points. The size of the box was determined by the complexity of the route. The system was mechanical, with semaphore signals (these have a pivoting arm, which moves to indicate if the line is clear or not) and points controlled by rodding which went from a frame of levers in the box to the points or signals themselves. The signalman's main duty was to get each train from point A to point B safely and on time. They would enter each train movement into the Train Register Book, which sat on a desk inside the signal box cabin. The signalman would be able to communicate with other signal boxes down the line via a series of bell codes. These were sent via telegraph wire. You can see the telegraph wires on many heritage lines up and down the country.

As well as actually operating the signals and points, all of which were interlocked (meaning that that signalman could not set these in an unsafe sequence) the signalman's duties included watching the ends of passing trains. They did this to see if the last carriage or wagon displayed a red tail lamp. If it did then the train was complete. If it did not then this could mean that either part of the train had detached, or someone had forgotten to place the lamp, both of which were regarded as very serious.

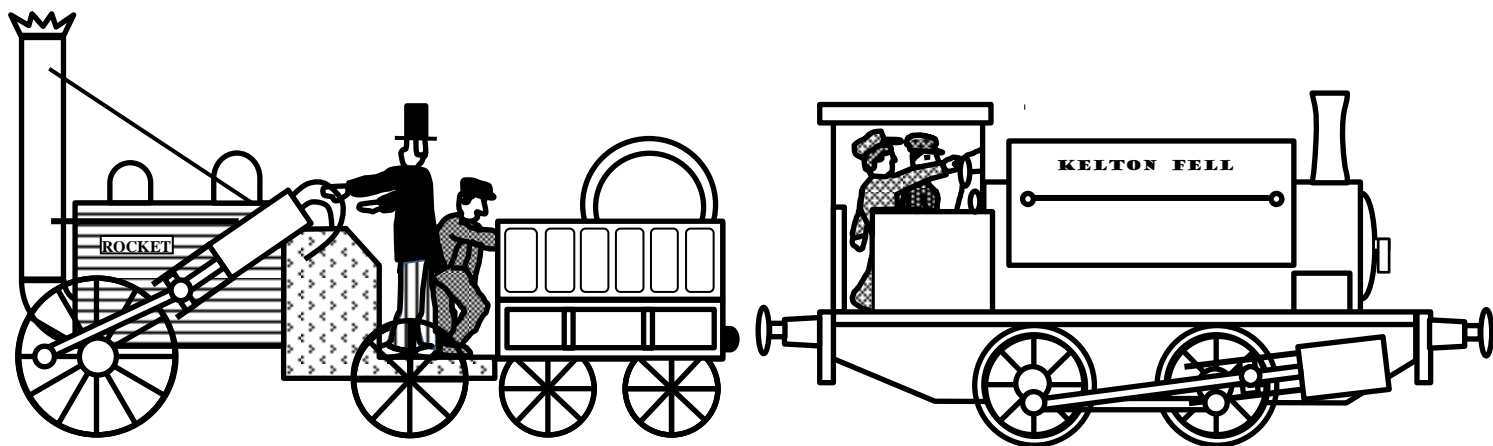
THE VICTORIAN LEGACY

By 1901 the railway industry and infrastructure was on a completely different scale to that which had existed in 1837. The country was now criss-crossed with a network of lines that served hundreds of communities of varying sizes. Safety systems and regulations had been put in place which had drastically reduced the number of railway-related accidents and improved the efficiency of the system. The railways, which had been, in the early 19th Century, something to be feared, were now a part of the culture and life of the country, and there was a sense of pride in what railways in Britain had achieved. Formidable natural barriers had been successfully conquered through engineering marvels such as tunnels, viaducts and bridges, and the network was at the height of its profitability and influence. Locomotive works throughout the country, such as North British Ltd. - the largest locomotive and rolling stock works outside the United States - were also exporting examples of British made engines worldwide, with many of those who began their careers on British and Scottish railways using their expertise to help set up railway networks abroad.

It is no surprise that many people now regard the years prior to the outbreak of the First World War in 1914 as the zenith of railways in this country.

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THE VICTORIANS LOCOMOTIVES



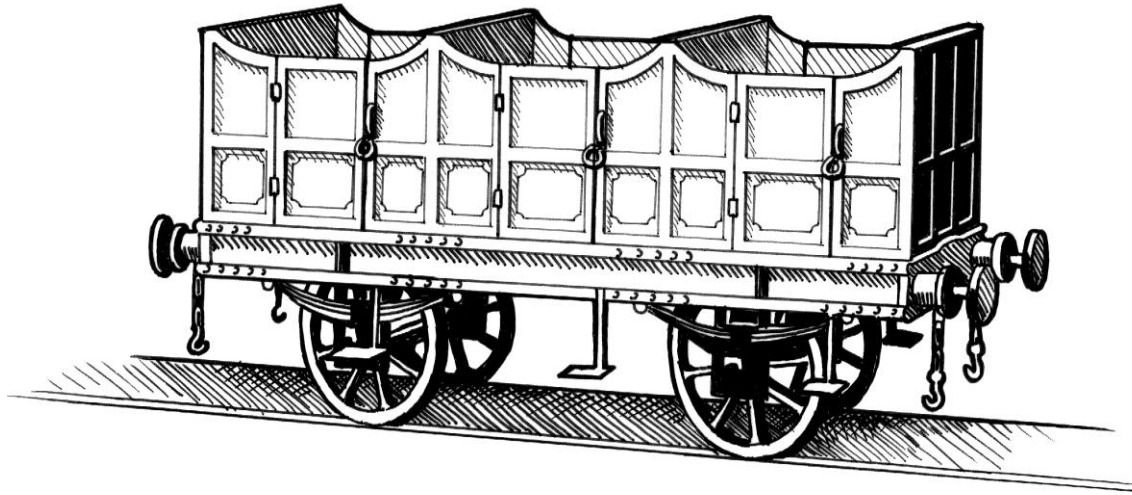
“Rocket” (above left), built by Robert Stephenson in 1829, was one of the first really successful steam engines. The oldest locomotive in the Museum (just inside the second Museum building) is from 1876 and called “Kelton Fell” (above right).

List five things which make “Rocket” different from “Kelton Fell”. You could think about where the wheels are, where the driver would stand, where the coal and water are kept.

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EARLY PASSENGER COACHES



The very first passenger coaches were little better than open wagons, with crude wooden seats and no roof. In early Victorian times these began to be replaced by better coaching stock, more suited to carrying large amounts of passengers. Poorer passengers travelled “Third Class”, with richer travellers paying much more to travel “First Class” in much better conditions. Look at the coach above. List at least two things in the box below that you would not like about travelling in it.

Think about the kinds of railway coaches that you can travel on nowadays, and write in the box below about at least three features of today’s railway coaches that make travel much more pleasant than it would have been in early Victorian times.

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LUXURY TRAVEL

By the end of the Victorian Era in 1901, railways had been transformed. The rich and famous could even travel in luxury in their own coaches.

1. Look at the carriage (right) made for the Prince of Wales (later Edward VII). Why would he not travel by road instead?

2. What do you think his personal saloon would be like inside?

3. Why do you think he travelled mainly in Aberdeenshire?

4. Look at the Duke of Sutherland's saloon (pictured right). Was it always hauled by his private train? If not then how else was it hauled?

5. Can you find what wood was used inside the coach? Now describe the interior.

6. What would you have in your own personal & private carriage?

Why don't you now try to create your own private carriage on a piece of paper!

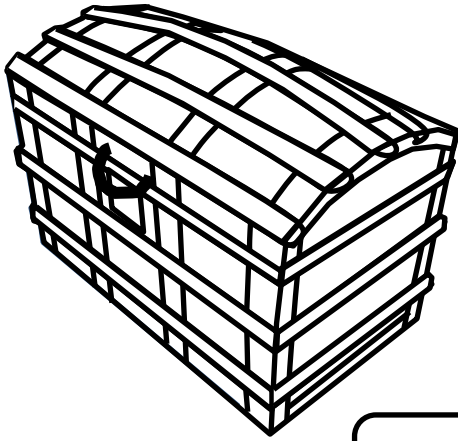
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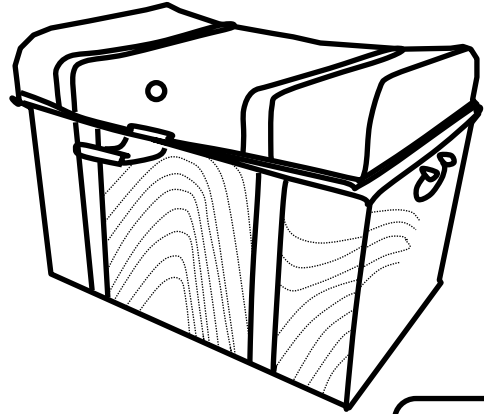
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LUGGAGE

Tick each different piece of luggage as you find it in the Museum!
Write on the dotted lines what you could put in each one?

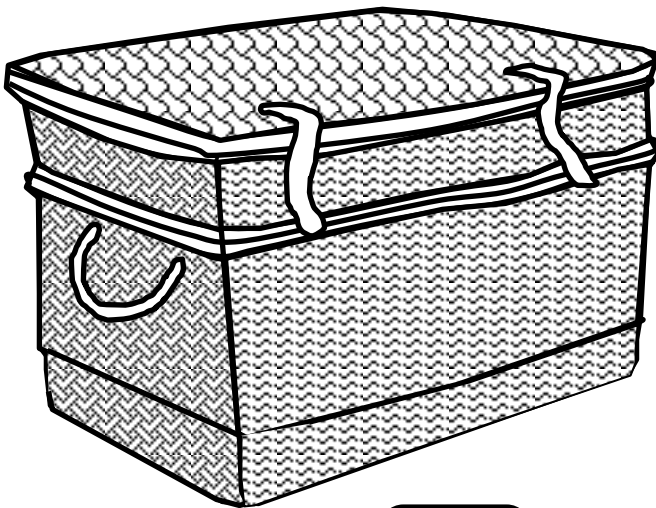


Wooden Chest

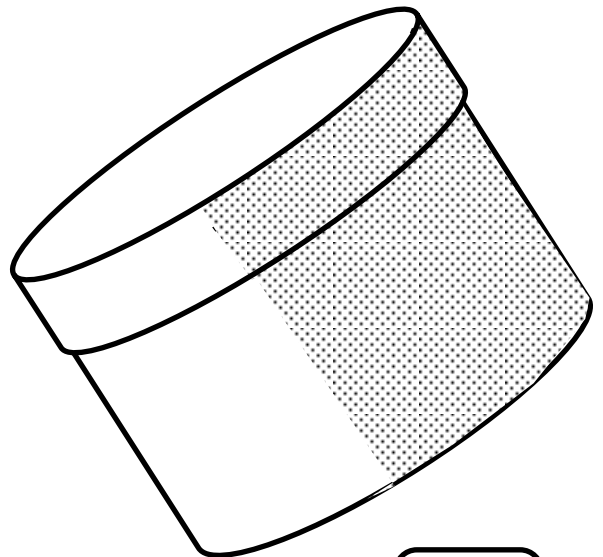


Metal Trunk

Painted to look like wood



Wicker Basket



Rounded Box

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THE VICTORIANS HOLIDAYS



1. Why do you think holidays were not common before the coming of the railway?

2. What kinds of places became the most popular holiday destinations?

3. Why was the luggage so large and bulky (right)? Look at the figures above right for a clue!



4. How would a traveller manage to get on and off the train with their luggage?

5. Where would the luggage be kept on the train?

6. What kind of things would you take with you on holiday and where would be your ideal destination?

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JOBS ON THE RAILWAY

There were many different jobs on the Victorian railway.

Write about what each person did:-



“Willie” on duty in the CR Brake Van

STATION MASTER:

PORTER:

ENGINE DRIVER:

FIREMAN:

GUARD:

TICKET INSPECTOR:

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THE VICTORIANS FISH FOR TEA!

1. Why did people who were far from the sea not normally eat fish?

2. Before the railways, how was fish preserved to make it last longer?

3. How was the fish kept cool inside the fish van?

4. How was the fish van (below) usually taken from port to the towns?



5. What happened if there was a very large catch of fish at the harbour?

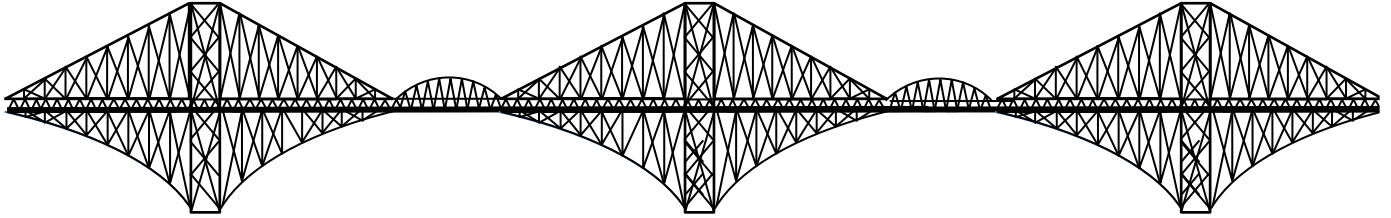
6. Can you think of other things which would perish or rot if they are left too long?

7. How do you think fish is transported and kept fresh now?

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CIVIL ENGINEERING



The Victorian Era was a time of great technical progress and, to allow the railways to cross rivers and valleys, huge bridges and other examples of CIVIL ENGINEERING were constructed. Scottish engineers such as THOMAS TELFORD created masterpieces of construction and design not only for the railways, but also for Britain's canal network too.

The most famous example of railway construction in Scotland has to be the Forth Rail Bridge (above), which spans the river Forth running from South to North Queensferry. Use the Internet and/or books and see if you can find the answers to the following questions and write these in the space below:

1. When was the bridge completed?

2. Who designed the bridge?

3. Who opened the bridge?

4. What railway company owned the line which went over the bridge?

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THE TAY BRIDGE DISASTER

On 28th December, 1879, in a howling gale-force wind, the central spans of the Tay Bridge collapsed and took with them a northbound passenger train.

See if you can find out the answers to the following questions. Use the Internet and/or books to help you in your quest for answers and write them in the spaces below.

1. When was the Tay Bridge opened?
2. How long was the Tay Bridge?
3. Who designed the bridge?
4. How many people were killed in the disaster?
5. What was the name of the last station where passengers got on before the train went on to the bridge?
6. Which other bridge was being planned by the Tay Bridge's engineer but, following the disaster, was given to others to design and is now one of Scotland's best-known landmarks?

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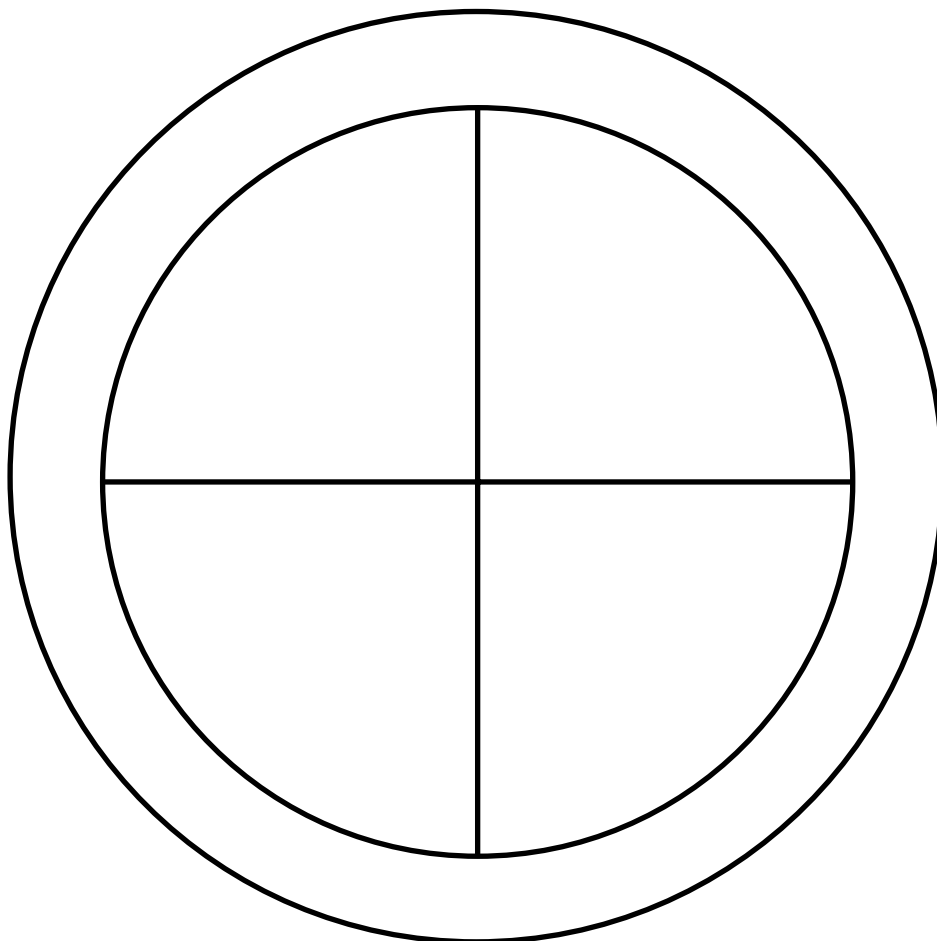
RAILWAY COATS OF ARMS

Ever since their early days, the railway companies had a Heraldic Coat of Arms, crest or emblem, which were approved by the Royal College of Arms in London. They contained things to do with the main towns or areas the companies served. Below are two examples of Victorian railway emblems: the Coats of Arms of the Great North of Scotland Railway (as seen on "Gordon Highlander") and the North British Railway (from Saddle Tank no. 42)



Why not make your very own Coat of Arms?

Think of four of your favourite things, or things which you would want in your railway emblem, and draw them inside the shape below! Remember to show the name of your company round the outside!



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