



ENJOYING YOUR RAILWAY

Bronze Award

The 'railway world' has its own set of jargon, in common with most other worlds. To be able to be safe and enjoy the railway, you will need to learn the special meanings used by railway enthusiasts, and a lot of other things, so that you are able to use them correctly and understand what is meant when talking to others. This will also help keep you safe whilst at a railway.

The Bronze Award introduces you to the wonderful world of miniature railways.

Miniature railways are all different in their length, their shape and also the way they are built. You may find a railway in a garden or in your local park.

Railway - When we say "Railway" we usually mean the tracks, trains, stations, signals, and all the other bits and pieces that might be used to make trains run.

Permanent Way - The permanent way is just the railway track.

Something we all are concerned with at the railway is keeping everybody safe - you, me, and our visitors. There will be rules which each railway makes and you will have to follow these so that everyone can enjoy themselves safely.

Why do our trains go.

Put simply, if you put some kind of power onto a set of wheels and then put it all on a railway track then this becomes a locomotive (sometimes shortened to 'loco') or 'engine'.

There are three main ways of powering our locomotives. This is how we 'propel' our locomotive and so it is called propulsion.

Models of older locomotives are usually powered by steam. The steam is mostly made by coal fires (but oil, gas, coke, wood and peat are also used) heating water beyond boiling point

More modern locomotives are made to look like the diesel or electric engines that

we see today on full size railways and are usually powered by electricity from a battery inside the locomotive or they can have a petrol engine to make them move.

So either Steam, Electricity from batteries or Petrol (and very occasionally pedals) to



make our engines go.

Steam locomotives have a boiler to heat the water in, and this has to be tested and certified safe. When in use, they burn hot coal and can let out sudden jets of steam and boiling water. So staying out of range is safest, until the engine driver allows you to come near.

You will learn a little more about the locomotives in the Silver Award but now is the time to learn about the ways to keep safe around them.

An engine driver has to keep their water level correct, their steam pressure up, as well as keeping their fire good and hot, and so they will be very busy with all this. Some drivers may be happy to show the fire to passengers and children who may not even realise there is a fire involved, but if not you can help them by keeping passengers and children away from their engine by explaining how hot it can be.

Petrol driven locomotives are generally powered by small petrol engine, roughly around the size of lawn mower engine. Petrol engines can also get hot and they let out dangerous gases.

Battery electric locomotives, as the name says, get their power from batteries and generally have several motors, one for each wheel set.

Even when the driver is a good one their steam engine can send smoke and steam out of the chimney and could cause discomfort to the driver, passengers or people around the track.

Petrol can also be very dangerous and catches fire very easily, so of course you must handle it with great care especially when putting more petrol in the tank. This should only be done by an experienced person and in a special area of the track away from everyone else.

Batteries are sometimes filled with very dangerous acid, which can burn skin. Electric locomotives can speed up very quickly and this can make it dangerous for the passengers if the driver is not careful with the way they uses the controls.

Locomotive or Train - which is it?

A locomotive is the engine, whether it is steam, battery or petrol driven with its tender or driving truck attached.

A train is the locomotive with carriages or trucks of any kind coupled to it.

How trains are stopped

Brakes

Battery electric and Petrol locos can use their motors for braking. They can also be fitted with vacuum or air brakes. These are usually fitted to the carriages as well to help give better braking.

Steam engines can also use steam to operate a brake and sometimes have a device called an **ejector** to produce a vacuum to help apply the brakes. Most engines also have a handbrake which can be applied when the locomotive is left standing for any length of time.

One day you may want to have your own engine and there are many kits available

to help you get started. Some clubs have help available to assist you in building your own engine.

Engine drivers may be any age, but due to insurance rules drivers must be over 16 years of age to carry members of the public.

Railway open days

Whilst 7½" gauge locomotives, trains and railways are absolutely wonderful for you to enjoy, it must be remembered at all times that they can be very dangerous and could cause injury to you or other people if you are not careful.

Railways have to consider how to make sure everybody who visits them is kept healthy and safe. This is the law and so all of us have to do it.

Of course this means doing everything in a thoughtful way so that it is done safely and within the rules. Then everything will run properly.

Even if your railway is not open to the public it is very important that it operates safely and just taking care can make sure this happens.

Most tracks have a person who is in charge or responsible for running the whole railway. They may even have a special name such as 'Responsible Officer' or 'Station Master' and you should know who this is so that if you see anything dangerous or something they should know, you can tell them what you have seen. , Also if they ask you to do some work for the railway or they ask you to stay out of the way, do it straight away! If it was work to do, let them know when you have finished the job.

If your railway is open to the public and carrying passengers, station staff must be appointed to ensure no members of the public walk onto the track and that they stand well back from the edge of the platform. They should also have an "Operating Procedure" or other description which describes the jobs of all staff for public running days. This will be specific to a track and probably is great detail, see [LINK TO BE INCLUDED](#) for an extract of the Hereford Society of Model Engineers "Operating Procedure". They should look after people getting on and off the train and tell them important things, to keep feet on the foot boards, not lean out, and sit up straight. Each railway has its own list of things to say, and you will soon learn what they are.

When everybody is safely on the train the station staff will tell the Guard, who is in

charge of the train, that it is ready to leave. Some people think it is the engine driver, but they are in charge of the engine and has enough to do just driving his train correctly and in a safe way. The engine driver also has to watch out for signals and speed limit signs on the railway.

The Guard is in charge of the train and so that they can see everything that is going on, they ride at the rear of his train. The Guard must make sure the passengers are seated safely and properly before and during the journey, that they do not lean out too far, drag their feet or stick their arms out, as they might get hurt.

The Guard can give instructions to the driver if needed to. This is usually done this with a whistle. The usual whistle signals are:

- One whistle blast to stop.
- Two whistle blasts to go forward.
- Three whistle blasts to go backwards.

Repeated (sometimes Six) whistle blasts when they wants the driver to stop now, for an emergency.

If the train has to stop for an emergency on the railway line for a while, the Guard will walk back along the track and make sure the next train has plenty of warning that there is danger ahead. They may even wave a red flag to do this.

Usually the Guard will make sure that the couplings are all properly fitted before starting the day and may help the driver conduct a brake test when a train first comes into service.

Connecting up a train

The carriages, trucks or wagons are connected or coupled together in one of these ways:

1. A metal bar with metal pins
2. A three-link chain or loose chain as on full size trucks
3. Automatic buckeye coupling
4. Three-link tensioning device
5. Combined centre buffer/coupling

At most railways you will see coupling number 1 or 2. Wait for the other members of the railway to show you how to couple up carriages, as that is best, but do be

careful as it is too easy to catch your fingers—that hurts! You may also need to understand how the brakes are connected, if vacuum or air brakes are used.

Where a locomotive has a tender or “driving truck” (this is usually a separate small wagon pulled behind the loco to carry the driver in order for him/her to drive it properly) this will probably be connected to the engine by a bar as in item 1 and perhaps a safety chain as well.

Track

Before you build a railway everybody has to give it a lot of thought.

The first thing to work out is which way the railway will go. For miniature railways you will want to find the flattest way so there are as few slopes, up or down, on the journey as possible. Sometimes we may even have to build a bridge or a tunnel to make our journey level.

When we have made the ground nice and flat we can start to build our track.

Ballast is laid on our level ground. This is a bed of hard stone such as granite, sleepers are put onto this and have more ballast put around them to keep them in place.

Sleepers are long pieces of wood (or steel, concrete or even plastic) which lay across the ballast.

Rail is then put on top of the sleepers. Rail comes in various shapes and sizes and is made of steel or aluminium. The rail is put on top of the sleepers, and held to the correct gauge by fixing screws, or special clips called chairs.

Gauge is the distance we fix the two rails apart on our sleepers and for our railways this is seven and one quarter inches or 7¼” and that is of course where we get the name for our Society (this is an old measurement but is about the same as 184mm).

When finished the whole thing is called the “**Permanent way**”

To do this, we build embankments (where we put the earth in to fill a hole), or we can make a cutting (where we dig down into the ground). This way we can help to make the journey as level as

Track Maintenance

Because the permanent way is so important, it needs to be looked after and have regular attention to keep it working properly. If the rails settle down into the ballast too much, (called subsidence) we add some more ballast and make the track level again. We need to make sure everything is safe each time we are going to operate our railway and that the track is ready for us to use.

A complete check of the track should be made by a 'responsible person' who would usually walk along the track looking for anything that is wrong such as, points not working correctly, rail damage, branches, or twigs on the track, in fact anything that might cause a problem.

When all this is completed it is a good thing to run a train to test that the line is working as it should do. An experienced driver will take the train round before any passenger-running takes place. When signals are to be used they can use this test run to check, with the Signman, that everything is working correctly.

Signalling

Railway signalling is the way we keep our trains and passengers safe by stopping trains from running into one another.

Without proper signalling it would be very easy for trains to catch up with one another and then they could collide (crash into one another). Also trains cannot stop quickly and signals will give a warning long before the driver can see another train.

Signals also let the driver know it is safe to continue with the journey as the Signman knows what is going on and keeps all the trains in the right and safe place.



Some single track railways operate what is called a **token** system instead of signals. This only allows the driver holding the token for the train, into one section of track at a time. A token can be almost anything, but there must only be one of them available.

Signals

A signal is a mechanical or electrical device, placed beside the railway line, so that a Signaller can let an engine driver know whether they must stop or continue along the line. Signals can tell us many things:

1. The line ahead is clear (free of any obstruction), blocked.
2. The driver may go
3. Which way points are going to make the train go.
4. The speed the train may travel at.
5. What the next signal along the line is showing.

Signals can be Semaphore or colour light signals. **Semaphore signals** were first invented a long time ago, but are still seen at many miniature railways. They have a moveable arm.

The colour of the signal and the position of the coloured arm tells the driver what to do. A red horizontal arm means stop.

Colour Light Signals work something like traffic lights with Red, Yellow (not amber) and Green lights. They tell the driver different things according to which light is lit. **Red** is for Stop, **Yellow** Proceed With Care and **Green** for All Clear to go.

It can also have lights attached to the side of the signal, these are known as feathers or indicators. They are usually white, this is to show the driver which way a point will be taking the train.

Some railways do not use signalling, relying on the driver being able to see what is ahead. This is called line of sight.

