Federation of Model Engineering Societies

S3. Dummy Wagon Loads

This document was written by 'The Wagon Man' for the FMES on line readership. 'The Wagon Man' is a Committee Member of FMES and has as his speciality producing scratch-built models of Railway Wagons in 5-inch gauge. This series of Articles includes his personal perspective on this fascinating branch of the hobby.

Introduction.

This is the third of an occasional series of Supplements dealing with topics generally applicable to Scratch Building Wagons of the late steam era. This time we take a look at examples of **Loads** which could be carried.

The Railways were designated to be "Common Carriers", which meant they could carry any load that may be offered to them. Whilst there were wagons designed for specific loads, more frequently it implied special fittings on standard wagons which would carry the load securely. Many of these would be special-to-type one offs for an unusual load.

Wagons were not meant to run empty – they had to be kept as occupied as possible to make them profitable.

This helps us enormously. In addition to pictures of freight wagons in every railway book, you might choose to consider a load that you would like to see. Chances are, of course, that you will not find a photograph of it, let alone detailed information. The loads in this note are all in this category – none are reproductions of a full-size example, but that does not mean that representative characteristics of full size should not be accurate where possible even on an imaginary load or fitting.

Aveling Porter Traction Engine Boilers

The first wagon I built in 5" gauge was an SER Well Wagon (W1 in this series), built especially for transporting Aveling Porter Traction Engines from their factory at Rochester. In the write up, I expressed my mild surprise at its size, with a deck area approaching Blackpool Tower Ballroom, and it looked dreadfully empty.

When I exhibited it at one of the major exhibitions, I was lucky enough to be loaned a “Minnie”, a popular 1” scale Traction Engine, as a representative load. What a difference – just like photographs of the original. It looked right (old maxim, if it looks right, it probably is).

Enter my first imaginary load. It seemed to me that naked boilers might require transportation at some time, and these would require a special fixture to ensure the safety and security of such a heavy load. Comparison of full-size photographs of an Aveling Porter Traction Engine and a Minnie Boiler showed them to be very similar, and a Cradle was designed using it as a basis. Moreover, two boilers could be accommodated. Accordingly, two dummy Minnie Boilers were built in metal and wood, a lot of work in itself.

Turning to the Cradle, this was constructed entirely of wood to my own design, based on sound building principles with respect to the provision of Bearers and Braces.

Note particularly the provision of hold down chains. On the full-size wagon these are kept in a chain locker (middle of the wagon, though no doubt some went walkabout during the wagon’s life!) On the model these are spring loaded for ease of removal for the Cradle and its storage, but they are functional inasmuch as they restrain the load when the wagon is in motion.

The final result is shown below. Note the Boilers are chained to the Cradle.

So, was I justified in modelling an imaginary load? I think yes. Something similar could have existed, but the details in the model reflect as accurately as possible the practices of the time.

Transformer

One thing the Southern Railway used in large quantities was **ELECTRICITY,** in particular in the London suburban areas initially but later extending to the East, South and West coasts. Because of the low traction voltage (typically 650 V DC) and high current (1,000 A plus) per EMU, it required Booster Stations at frequent intervals (10 to 20 miles) each with its own Transformer and Rectifier System. The Transformers were normally out in the open, but the rectifier was in a separate building. I recall one at the London end of Bagshot station, and a group of three on the south side of the approaches to Waterloo. They lasted into the 70s.

The model is again not of a specific installation due to lack of data, but based on photographs of a wide variety of installations which normally appeared as a shadowy grainy item in the background.

However, I had one piece of guidance, the loading gauge, which set the maximum height and width. Armed with this I could scheme out a generic Transformer with reasonably accurate representations of its individual elements,

In model form it is extremely basic, a box with add ons. An obvious conspicuous part of the design was the cooling arrangement. First generation transformers were filled with a special high purity oil developed for the purpose which was circulated around the tank and through the transformer core to keep it cool by convection. As power handling needs became greater, later designs used a pump to ensure forced circulation. Part of the circulation path were the external pipes acting as a radiator. The main external fittings were the convection pipes, an oil tank Header Tank, a Tap Changer (which may or may not be manual) and the high voltage AC Input Feed, all easy items to model. (There were of course a number of safety features built into the design, but these are not immediately visible.)

A tip for those who do not have access to spray painting equipment. Paint the box before fitting the pipes, or you will finish up with a brush which can never be used again. As I was concerned with the Southern whose house colour was green, I visited the local garden centre and purchased a roll of green plastic covered fence straining wire, and made the pipes from this. A quick paint over with the base colour after fitting then sufficed.

You may be asking where <u>is</u> it accurate? Well, it is not an individual item, but a reflection of installation practice. I am led to believe that the transformer was transported to site empty, and filled with oil once it was installed. Careful examination of the photograph will show that the gauge on the oil header tank shows this to be the case, as one would expect when it is being transported to site.

One final thing. Transformers are **HEAVY**, so don't forget the tie downs!

Cable Drums and Cradle

Having got our supply of electricity, it required cables (miles and miles) of different sizes and functions. The Traction Cables were beefy items, but signalling cables were considerable smaller.

They all had one thing in common. Cable Drums were never stored or transported flat. They had to be upright for ease of rolling, and even so could only be rolled (or unrolled) in one direction to prevent damage from internal entanglement, and so they required special fittings for transport.

As far as modelling is concerned the Cradles are straightforward woodwork, albeit of freelance but functional design.

The Drums however presented a much more difficult challenge, that of finding an unobstructed photograph of the Drum face showing its markings. I contacted the marketing departments of several of the cable suppliers in this country, but they could not supply brochures, most cables now being manufactured off shore. Eventually I found an advertisement in a 1950s Electrical Contractor's Handbook. This included a picture showing a large gentleman pushing an even larger drum. The only problem was that his hand covered part of the drum face. I scanned and scaled the drawing and produced prints of the appropriate size. The drums were then embellished with a boss strengthening plate and six dummy square washers, and this produced a reasonably realistic end result.

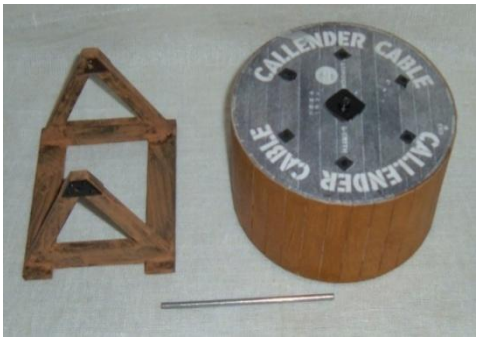
Unfortunately, of course, the original was monochrome, so could only be printed in grey. I don't know the colour of the full size, but grey would seem to be quite possible. The grey also helped in that a soft lead pencil could be used to blend the aforementioned large gentleman's hand into the background.

Accuracy? Callender Cable became part of BICC. Their factory was a landmark near to the SECR North Kent Coast line at Erith (near Dartford). Again, it is conceivable that such a convenient local asset may have been very attractive to the railway.

I produced two types, one single and the other double. Either Drum size can be accommodated and they are compatible with either or can be of mixed sizes.

Single Drum Variant

The LH photograph shows the Drum removed from the Cradle, and its mounting pin allowing quick removal for transport. This arrangement is used on both types.



Double Drum Variant

The picture shows the double drum variant, and just visible to its right is the single drum version. All three drums are being carried on an ex-SR Engineering Department wagon (W8 in this series).

Crates and Miscellaneous Items

Wooden Crates are easy to model – mine are from appropriate size cardboard boxes. Experimentation with the computer will produce a wrapper which is printed with the appropriate lettering and lines to represent the wooden planks. They are painted with wood stain.

Even crates require attention to detail if they are to be correct. Don't forget the bearers on the bottom, giving clearance for ease of lifting. Lettering must be correct in style. In my youth, I was taught abbreviations required a full stop after them. This has now gone out of fashion, and his dates the examples, though imaginary, to early BR (1950s). Note also the use of larger initial letters.

Miscellaneous items, in this case a nondescript casting, were frequently carried on a bed of straw.

This photo shows both examples loaded into the Chatham Dockyard Wagon described in Part W13 of this series. Where are the tie downs? What about the no loose shunting edict? This wagon was for internal use on an industrial line – it probably never exceeded 5 mph, so the usual arrangements were probably not felt necessary. It is a realistic situation, in that it matches the load to its wagon and its usage.

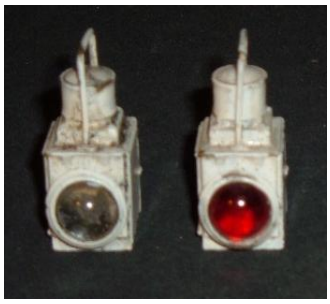
George LeGarde

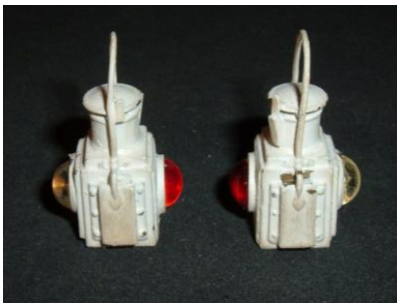
No train is complete without a Guard. This one originated as a Dolls House twelfth scale figure. After careful carving, and fitting him with a suitable hat made of cardboard, George LeGarde was born. (I christened him George in memory of a Guard on the Watercress Line, sadly no longer with us). His cap badge is Southern green, and the second photograph shows him on the balcony of the LBSCR Brake Van described in Part W10 of this series.

….and his Lamps

A word on **LAMPS**. We all know that trains carry a Red light on the last vehicle in order that the signalman knows that the train is complete when it passed. We also know that the Lamp Irons (ie brackets) are aligned across the vehicle on every railway but one – you guessed it - the Great Western, where they are aligned fore and aft. So far so good. But in addition to the conventional orientation the Brake Vans on all other railways also carried fore and aft irons halfway up the body sides or, more typically, halfway up the veranda corner supports. These take special lamps used on unfitted trains, which display a White Light to the front and a Red light to the rear. These enable the driver or fireman to look back to check that the train has not divided, in addition to the signalman carrying out his normal duty.

How can we reproduce these lamps in model form? The specialist suppliers produce exquisite examples of various lamps in 5" scale, and these come with spare red and white lenses so that they can be used for head or tail lamps. The first two of the photos below show Southern and Great Western examples. The principal difference (other than detailed outline) is that the pocket is on the rear of the Southern lamp for transverse irons and hence cannot be seen, whereas the Western example clearly shows the pocket each side to accommodate fore and aft irons. I produced the double-sided lamp (photo 3) by modifying a Great Western example and using the spare lenses, one colour each side. Now you could argue that this is not accurate – maybe, but I am not sure what a GW double sided lamp looks like. On the other hand, a conspicuous item is being reproduced without which any unfitted train would not be an accurate representation.





Reference Material

Two particularly good sources of information are

- Freight Wagons and Loads in Service on the Great Western Railway and British Rail, Western Region. Author: J H Russell.
- British Railways Wagons. Their Loads and Loading. Authors Brian Grant and Bill Taylor.

Other sources are

- Almost any photo album – select your own area/era.
- Your own imagination – think of a load, consider the requirement for special handling, design the two in the context of practicality.
- These sources should keep you going for a while, but if all else fails the simplest load to model is one that is sheeted over. Even here the design, lettering and its fastening to the wagon all require research if they are to be accurate.

Operational Aspects

- Rules for Observance by Employees. British Railways Board and successors. The authoritative and comprehensive instructions covering all operational aspects.

Comment

I hope that this short note has shown that accuracy in details is possible even for an imaginary load, and this can help lead to realism.

3. An Intermission

This Supplement is the last document in the present series as the writing has now caught up with the model making. Wagon W16 is in an advanced stage of construction, but not yet complete. When it is a write up will be published. Folder W17 is sitting in the PC. Presently it contains two possibles, and others may be added before any decision is made.

No supplements are planned, but if you have any suggestions for topics of general interest, please feel free to suggest them.

The series was primarily intended for model makers of limited experience, and to help and encourage the next generation of model engineers who wanted to try scratch building. I hope it has succeeded and that it has shown that it is well within your capability. Perseverance is the only essential skill. I also hope that more experienced modellers may have found something of interest.

As ever we want to hear your feedback, experiences, what gave you the most satisfaction and anything else you want to contribute. This request is equally applicable to both positive and negative inputs! A wise man should learn as much from their failures as their successes.

Your reactions, suggestions and notes will be of great interest and most useful, and could prompt the basis of new articles.

Please submit them via info@fmes.org.uk There is no closing date for submissions.

Many thanks in advance.

ABOVE ALL ENJOY YOUR MODEL MAKING IN 2026 and into the FUTURE

Very Best Wishes,

The Wagon Man

January 2026.