

Reading Society of Model
Engineers
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railway.co.uk
Charity Number 1163244

The Prospectus

July 2019



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Free to members



1922 built Metropolitan-Vickers electric locomotive No 22 SARAH SIDDONS waits at Ealing Broadway with original wooden stock. This was to celebrate the 150th anniversary of the District Line, on 23 June 2019.

**A NEW CHAIR
EXAMINING THE SWARF
IN THE GARDEN
BREAKING THE CODE
VITESSE ET LUXE**

Introducing the Trustees Chair(man)

John Billard

I am delighted to have been appointed by the trustees as their chair. I thought it would be useful to explain some of my background and my purpose in the job.

It has been some time since the RSME has had a person in the chair role. Previously the post was elected directly by the AGM. Now it is a trustees appointment. The new role is to advise the trustees and to lead in carrying out their wishes. Outside the club it is useful to have someone in a central position to present RSME in any useful way. Our elected trustees have huge experience in managing RSME and I have every confidence that this will successfully continue. Now RSME is a charity it has wider obligations in the community.



The purpose of the Society is to fulfil the terms of its charitable status; to educate the public and to further model engineering and associated interests in our area. A major part of that is the Prospect Park Railway. There no reasons to make any changes to that. You only have to come down to the club house on a Work Wednesday or attend club running on a Saturday to see how successful we are. The Public Running Days are the RSME on show to the general public with huge success; almost overwhelming. A small group is committed to the Birthday Party operation and this brings in a vital income for the benefit of every member. We are committed to our Young Engineer project.

I have been a model engineer for over 40 years and at present I am constructing a 5-inch gauge Great Eastern Gresley Rebuilt Super Claud; I have to confess that this started 19 years ago and there is much still to do! I run a lovely 5-inch Manor Class engine that I was lucky to acquire a while ago. I have also accomplished various car restorations including pre-war; I am president of the Steam Plough Club, have an interest in marine subjects and canals, and also play live music (usually in the street or pub).

Just a word about something that the Trustees have been a little concerned about; that is speed on the track. The effects of an accident, particularly to a child, does not bear thinking about and we have had to issue warnings to some members about this. Please remember that the raised track limit is 5 mph during times when the public is present.

I am particularly pleased that Peter Harrison is joining me as Secretary to the Trustees. Peter is full of enthusiasm for the RSME and it great to have him with us

Finally, if any member wishes to contact me about any issue concerning RSME I am always available. My contact details are in Prospectus.

Ponderings

by 61249

Even More Virility Symbols

In May I gave Infrastructure engineers a hard time, this month it is the turn of the rolling stock guys. Train maintenance folk tend to spend most of their time lurking around in depots. Some of them even wear overalls and get their hands dirty, although this is becoming less of a necessity since many trains are fixed with a laptop or changing a component that comes out of a clean cupboard. All the really dirty jobs have pretty well disappeared, traction motors don't have brushes any more spreading their carbon deposits all over the motors, and anyone venturing near them. Brake blocks have turned into pads but with regenerative braking they are changed much less frequently than they were in my day. Diesel engines remain as the main source of oil and dirt, and even they may be on their way out, but in general the face of depots has changed completely in relation to cleanliness. The influences are safety to avoid slips trips and falls, quality control standards with equipment designed to match the train, reducing spillage and the like, and better treatment for floor surfaces together with machine cleaning. These have combined to make the modern depot a clean and pleasant place to work compared with the kind of place I tried to manage in the 1970s.

If a train engineer wishes to impress you, he or she will take you to their favourite depot. During the day these can be places of relative calm, sometimes as quiet as a cathedral just before the service starts. If remarked upon, be sure that the engineer will know it is shift changeover time or some such excuse. In depots I managed it was usually because we could not get enough staff to make a real noise, and some of the staff we had could not always be found. Be sure though, that the route to the really impressive part of the depot will take you through the stores, where immaculate racking and pristine labelling will give the impression of competent and professional control of logistics. This may or may not be an illusion. If there are new trains on the depot and you are a visitor, it is best not to look at the one chosen by your host, but the one in the far siding, a quick look will reveal that one of the electrical cupboards is open, and nearly empty, or the windscreen is missing, or the wipers, or the coupling..... Sometimes it will be obvious that there are so many parts missing that the train is not going to go anywhere for a while, and that it has become a "Christmas tree" yielding gifts of parts that cannot be found in the stores but which are necessary to repair another train in the fleet. A new fleet introduction without the creation of a "Christmas tree" is a very rare event, not made any easier by the tendency of parts to be sourced from all over the world.

One other trick if you visit a depot is to look at the scrap bin and "material for repair" pile. Your host may well deny that there is a pantograph problem with the fleet, but a pile of broken and bent ones in the corner will be testimony to the truth, rather than the spin.

Having taken you through the immaculate stores, shown you a working new train and explained the lack of activity, your host will be firmly on their way to show you the train engineer's virility symbol. The brand-new wheel lathe. If the depot lathe is more than 5 years old it will not be on the visit schedule, but the train engineer's favourite depot is likely to have the very latest in wheel maintenance technology. The symbol of wealth and organisation will be impressive in a number of ways. Probably built in Germany (or at least with a label on it in German – it may actually have been manufactured somewhere else), it will feature a high degree of automation, high speed turnover of wheelsets (All still fitted to the train) and programmes to minimise the amount of metal removed to restore a perfect profile to the wheel. All great so far!

As usual, and as befits the theory that management is generally 90% to blame for everything, it all goes wrong when you actually use the machine. This has got better since I was involved, but on every depot visit I have made I always look at the scrap bins. These days they will tell you a lot about recycling and the maturity of the management in that respect, but the discarded brake pads may well be above scrapping thickness – why? The swarf in the output from the wheel lathe will also be a good indicator – if it has surface rust that could be a good start, and means the bin is not emptied too frequently, or filled up very quickly. The thickness of the curled swarf will also indicate how deep the cuts have been. Bear in mind that this is the most expensive metal on the depot, wheels cost upwards of £6k per set, and 5 reprofiling turns against 4 is a 20% saving if my maths is correct.

There is always the question as to why we turn wheels at all when they are on the vehicle. It is very convenient, but why not (as the Southern did in the 70s) change them, turning off the vehicle? This works well with simple wheelsets that are easy to remove, and can result in quicker vehicle release, so design them that way! Motorised wheelsets are always going to be more difficult, and distributed traction means more of them as a percentage of the number of wheels per unit. There are two operational advantages for lots of motors, - improved traction performance (although this can be overstated with good control of fewer motors), and a higher volume of braking energy recovered if regeneration is available, and less brake pad cost even if rheostatic braking only.

The huge and hidden disadvantage of modern traction systems is that frequency control of AC traction motors means that most systems cannot cope with wheels that rotate at different speeds, that is wheels that are of a different diameter. Tolerance levels differ by system and manufacturer but can be quite small – 10 thou in some cases between adjacent wheelsets, and a little more between pairs on the same vehicle. What this means is that wheels cannot be turned in isolation, and the adjacent wheel probably needs attention, possibly three more on the same vehicle, just to get the diameter matching right.

Optimising the system described in the previous paragraphs is a management task,

made easy by a big, clever wheel lathe capable of removing more expensive material quickly. Ugh! I hate them. The last time I had the data available I did a wheel-life comparison between the Southern (Central Section) class 455s maintained at Selhurst and those working on the South Western section out of Waterloo, maintained at Wimbledon where there was a lathe. Selhurst had cranes, changed the wheels, turned them on a centre lathe and held a stock of different sized wheels.

At Wimbledon, the management decided that the wheel lathe operators bonus was based on the number of wheels turned. Big mistake. What the data showed was that a vehicle was 4 times more likely to have all wheels turned at Wimbledon than all wheels changed at Selhurst. And the overall impact was that total wheel life per vehicle mile was twice as good for the Central section units, despite a curvier route and more stops. Twice the cost for the most expensive component on the train makes a difference. So much for virility symbols, beware!



"No swarf at all in this publicity photo!" (Heigenscheidt MFD GmbH)

IN THE GARDEN at the RSME



I'm getting a lot of enquiries about the purple plant by the club house door.

For members that are interested it is an Erysimum Bowles Mauve - it's a perennial wallflower and many garden centres stock it:

More next month.

George Saffrey

BREAKING THE CODE... OR AN INSIGHT AS TO WHY GREAT WESTERN LOCOMOTIVES ALL LOOK THE SAME? OR DO THEY? by David Scott

Imagine the scene of a darkened yard full of strangely similar locomotives during the earlier part of the last century. There is a heavy fog, a pea souper as someone extending a culinary joke to the state of outside, if you burn far too much coal. Plus you get the wrong weather conditions that capture the fine particles. Ash crunches underfoot as you look for your allotted locomotive. Your fireman has lit the flare lamp to try and help but this just highlights the buffer beams as you walk past more hidden masses of metal uncooperative in the current situation as to what they are. AND which one is yours for the next ten to 15 hours, of bunging more muck into the heavy skies!

I once joked to a friend who has a passion for Granges "That if you put the smaller Manor in front of a Grange you get two in perspective Manors or Granges!" We may not have long to get to try this out in FULL SIZE and prove a theory. A prior visit to the local may assist in this experiment, plus a bit of atmosphere of Steam or fog. Yes they are very similar and in the light of having a very short list of standard boilers which keeps maintenance periods very short as you can stock spares ready to be dropped into the next set of frames that is ready to receive.

I got introduced to Nick Freezer at a Model Railway show last month, and he said that the family had collected his Dads work. Cyril J. Freezer one-time editor of Railway Modeller had in more lean times model wise, had indeed conjured a Castle from

a Hall!

What a Wizard of an idea and saves such an amount of machining for the inner cylinders!

A Sainly idea as we were in the presence of the Reverend Peter Denny's two Sons Stephen and Crispin. A Saint is the two cylindered version of the Star an early Castle. Another locomotive you have to look twice at especially at Didcot where with a bit of bashing with Hall parts they built one!

Legend has it, that during Charles Collett's time as the big chief that during test runs he went on holiday... What would you have done with an impressive piece of machinery and too many miles of clear and open track in front of you? You could NEVER publish the results!

YES! Indeed all locomotives having been for heavy overhaul were tested light engine on the main line. And unfortunately fitted with speedometers! And confirmed by a couple of OLD BOYS from Swindon after a tour of a super GW workshop of the model kind! 5 Kings and 2 Castles in 7 ¼ of course, almost ready to ship out... "Yes they all cleared the TON and a bit more!" he admitted.

Me and my miss spent youth, and a tip off to who was visiting in the school holidays.

Talking of interchangeable parts? OOPS so you say that City of Truro contains 70% of parts including tender which never got to dash down at 102 miles an hour in 1904? Do they realize this at the Museum? Covering her in cling film back in 1985 and lining her out in a pretty BR black dress may have been the final straw for some. But not 100% original, and you joked about the boiler originating on a Prairie Tank of the M T variety. Mixed Traffic, possibly from the 30s.

Yes standard parts go a very long way to speed up construction as well... So back in 1904 the rear steps on a small Prairie I recall two 15s and 16 for the bottom from the works drawings! Came in handy for F. W. Hawksworth's 1500 class (Speedy) many years later. And I have the formers ready made for mine.

So in the darkness there is no use in looking at the steps as the works has made sure that these are very the same on most locomotives. In fact the little steps in front of the driving wheels on the Bulldog were the same attached to the 1500s for access front and rear years later.

All of this has in fact given us the wonderful growing collection of new builds of long scrapped models. You can imagine groups comparing angles and brackets and clubbing together to get them formed and shaped via various computers. "We are getting a pair of 47's brackets, 17s 22s 8s and 33s done!" click on mouse.

Reply. "A pair of 33s and 47s and 22s would be perfect please!" click on mouse back. He jokes!

We seem to have one of the rogue Sat Navs that guide the car toward Preserved Railways and The Churnet Valley got us diverted last summer. Well they have a loco called Katie sweet as she is. Not so is their 8F which being one of the Barry Ten is

very rough. The part being worked on and chatted about when we were there, was the size of a large shower tray, and by clubbing together had on the same setting, got several made slightly cheaper and ahead of the queue. Smoke box doors tend to get done in batches as well.

The Barry ten were considered beyond help for many years but with the shortage of some standard parts for the new builds came in handy!

It was my research into rivet patterns on Jintys that began an idea. The 5-inch drawings show both front and back being the same but in full size they are not! Call me a RIVET COUNTER but is there something that the workers in Swindon worked out and passed on to the drivers and firemen?

Which leads us back to the Hidden Code carefully marked out, drilled and riveted, and painted. Yes in the end squares (by the buffer) of each class of Great Western Locomotives there is a unique pattern denoting what you are looking for in the dark. Just 3 rivets on the end denote a 4400 class for example. I have now got quite a few found over the last year in the following photographs taken during various visits to preserved railways. And various model ones as well. Bolts denoting a pannier. Then these all look the same except for the later 1500 and the 9400 versions.

Some of them have subtle differences so did the Swindon men have the idea from Braille? The similarities are startling! Then the middle sections contain even more information and are of course all different.

David well into his Drilling holes in the Right Patterns... And Lily getting to grips with various curls of swarf assisting clearing various machines.



All photos David Scott





Vitesse et Luxe

by John Spokes

Last month I described some of the steam novelties at the French Railway Museum at Mulhouse and noted I would follow-up with something about the electric stock.

The French interest in railway electrification began in the early 20th century and today 15700 km (9755 miles), 55% of the total network, is electrified; some at 1500 V DC, but the majority at 25kV AC. The overhead catenary system has been used almost exclusively.

Photo A is of a 1500 V DC locomotive with wheel configuration 2-D-2. It was constructed in 1933 as one of number for use between Paris and Orleans and the locomotive is very well displayed with all the access panels along one side open so that the resistor banks, air blowing system, etc can be seen. This is complemented by a simplified electrical schematic (**Photo B**) showing the various configurations for supplying power to the four motors. These are all in-series, all in-parallel, part series-part parallel and recuperative braking. Maximum rated power is 2600 kW (3487HP), which is

over twice that of a contemporary Stanier Pacific. Also shown is the system of transferring torque from a motor to its driving wheel while allowing the sprung wheel to move relative to the fixed motor and transmission gearing. **Photo C.**

Photo D shows a relatively unattractive locomotive. This is a 25 kV AC locomotive with a CC wheel configuration, built in 1956 and retired in 1981. Used primarily for freight, its rated power was 2640 kW and its maximum speed was 60 kph.

On 29th April 1955 the SNCF took the world's speed record for conventional rail transport at 331 kph (206 mph), a record that stood for 54 years. The locomotive used to achieve this was BB-9004 (**Photo E**) and an aluminium plaque attached to the side of the engine records the event. The three-coach train was specially modified, but even so there was considerable damage to the track caused by 'hunting'. See **Photo F** – note the somewhat flimsy overhead system.

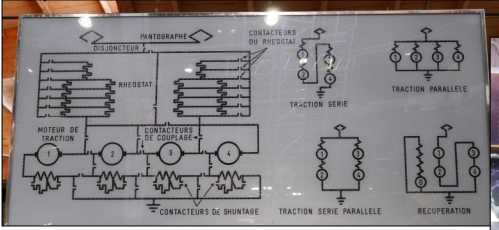
I conclude with the Autorail Rapide, one of 88 (not all identical) petrol engine powered railcars designed and built from 1934 by Ettore Bugatti, more famous for his cars, who was looking for alternative uses for the large petrol engine used in his Bugatti Royal Type 41, which at the time wasn't selling well. (Wish I'd bought one!). The engine was a 12.7 litre straight eight and arguably the largest petrol engine in the world. My photo (**Photo G**) shows not the original railcar in the museum, but the cover of a periodical published in September 1933. The 'dome' on the carriage roof was for the driver. Through design the vehicles were relatively light and typical average speeds were 130 kph (81 mph), shortening significantly then journey times from Paris to Strasbourg, Lyon, Nice and Marseille. Unlike other railcars, both in France and elsewhere, they were very suitable for high-speed, long-distance services. The Bugattis also broke braking records, all 16 wheels were fitted with drum brakes. At a speed of 150 kph the braking distance was only 600 meters. Their lifespan, however, was short; the final one was withdrawn from service in 1958. The reason – very fuel-thirsty, as were Bugatti's cars!



1500 V DC locomotive with wheel configuration 2-D-2.

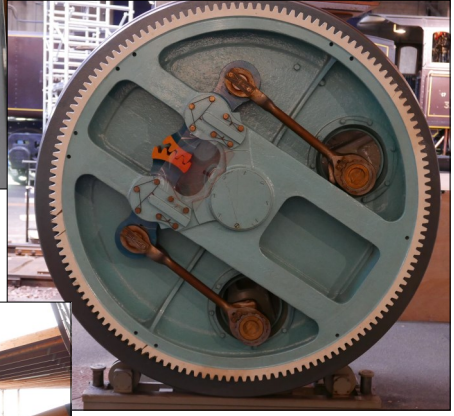
Photo A

All photos John Spokes

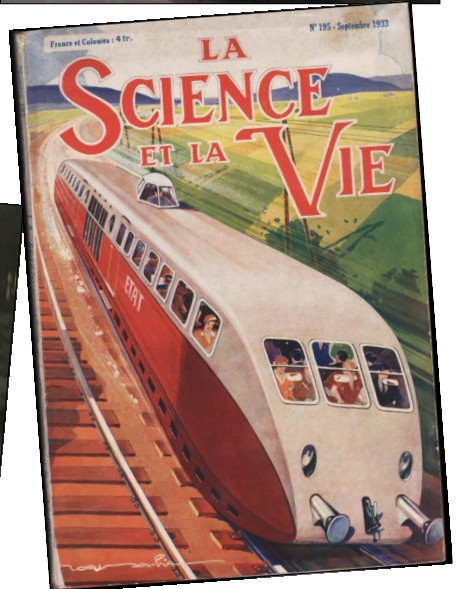


Above **Photo B**,

Right **Photo C**



Above, **Photo D**, right **Photo E**
 Below, see track damage, **Photo F**
 Below right, **Photo G**, the Bugatti



DIARY

JULY 2019

Saturday	6th	Birthday Party	14:30 to 17:00
Sunday	7th	Public Running	11am **
Thursday	11th	Nursery visit	11:00 to 14:00
Saturday	13th	Club Running	11am
Sunday	14th	Birthday Party	11:00 to 14:00
		Birthday Party	14:30 to 17:00
Monday	15th	Trustees Meeting	19:30
Tuesday	16th	Nursery visit	10:15 to 12:15
Thursday	18th	Children Centre visit	10:30 to 13:00
Sunday	21st	Birthday Party	11:00 to 13:30
		Birthday Party	14:30 to 17:00
Tuesday	23rd	Pre-school visit	t.b.c.
Saturday	27th	Young Engineers and Club running	11am
Sunday	28th	Birthday Party	11:00 to 13:30
		Birthday Party	14:30 to 17:00
Monday	29th	Special Needs	13:30

AUGUST 2019

Sunday	4th	Public Running	13:00
Saturday	5 th	Club Running	11am

** Berkshire Motor Show in the park

Comments by RSME members on any subject appearing in Prospectus are welcomed by the editor.

Opinions expressed in PROSPECTUS are the personal views of the contributor and cannot be taken as reflecting the views of the club committee or editor.

The deadline for the August issue is 18 July. This is the final date.

Contributions may be submitted in hard or soft copy to the editor.

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