Reading Society of Model Engineers Charity Number 1163244

The Prospectus

December 2023

Carl Trussler gets to grips with the NB Atlantic, featured last month, at the October Public Running, while Rob Ashfield, left, supervises. Photo Andy Midwinter

WISHING ALL MEMBERS AND THEIR FAMILIES A VERY HAPPY CHRISTMAS AND FOR THE NEW YEAR 2024

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Free to members
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THE VIEW FROM THE CHAIR — John Billard

Our November trustees meeting took place on the 13th. One item we are having to do with is the need to change our bank account appropriate for our charitable status. How easy was this? After some efforts Stephen has been able to complete the forms to make this happen. How much simpler it would have been to have been able to visit a branch says Jim! In the meantime placing some of our funds into a higher interest account remains pending.

Because of the amounts now being dealt with an independent examination of our accounts is being undertaken. (The outcome has been satisfactory and the report will be featured in the next PROSPECTUS.)

100 up! We were delighted to learn from our membership secretary that our total has now reached this figure. This can only be regarded as a credit to all those involved in the Society particularly our hard workers who make it all happen. Bear in mind that post Covid our total was down in the 60s so this is a real achievement..

Current projects include the workshop refurbishment, improvements to the members toilet, a new drain on the driveway following some flooding, and the installation (and training) of a defibrillator.

It was decided to set aside public running in December because of the effort required to run our four days of Santa specials. In its place Mike Sinclair has agreed to a club running on 2nd December. On the subject of the Santa days such is the demand the trustees will be considering how better to meet this for 2024.

For next year we are considering a Polly Engineering visit to our site and a club visit to the Fawley railway likely to take place in June.

Finally we noted that good progress is being made on our new lease and the interesting news that two people arrested following the break ins at our site are now serving prison sentences.

There will be no trustees meeting in December but we meet again in January.

Prospectus reflections

The piece last month on the H J Wood engine has created some interest including a comment by David Savage who edits the quarterly journal Criterion for the High Wycombe club. He remembers Sir Henry Wood conducting the Promenade Concert in June 1944, shortly before his death.

In answer to my query about the late Dave Cole's activities pictured last month Alasdair Milne has written as follows.

In the last Prospectus you asked if anyone could shed light on the activity in the photos of David Cole. I can as my first paid job after graduate apprenticeship was designing electric motors and generators in the design department of a manufacturer producing large motors and generators and I confirm that Dave is shown in the coil winding department of a manu-

facturer producing much wider range of machines that in my case, ie smaller motors as well as the larger.

For small motors (up to washing machine size) coils of insulated (enamelled) wire are wound into the stators. In the top left and next left pictures Dave is making the end connections on such coils. Small machines still use this design but the process in now fully automated on the smaller sizes.

On larger machines copper rectangular copper bar was and is used for the coils. The picture on the right shows that in Dave's company, such bars must have been cut to length, insulated by wrapping it with tape (paper, cambric) and then folded into shape in the device shown ready to be pushed into the slots in the stator core of the motor or generator. One type of such a winding was the diamond coil and the first picture on the right shows (table bottom right) that Dave's machine is forming the first stage of such coils.

This information has now been passed to Dave's family and thank you Alasdair for responding so promptly. Ed.

2023 ANNUAL GENERAL MEETING

This year's meeting took place on 16th November at the club house as usual. 35 members attended which was a good proportion of our membership.

Regarding the actions agreed at the last meeting the flat rate subscription has been implemented successfully and members access to club facilities have been increased. The club house security alarm is now up and running and the club financial accounts oh currently undergoing an independent examination which will make recommendations regarding protection against fraud.

The president's report was accepted and President John Billard thanked the membership for their continued dedication and hard work which has led to a successful year for the club which is now in a strong financial position. A 10 year site lease is now being put into place which will provide more protection for members. He was delighted to report that membership has grown from a post Covid low of about 60 to the current figure of over 100.

Special thanks were given to Stuart Kidd who had worked very hard behind the scenes on largely unnoticed administration tasks. This is essential to keep our charitable organisation in being and helps to ensure our continued success.

The trustees annual report having been accepted the meeting went on to approve the financial statement and accounts. Jim Brown said that as required by the Charity Commission our ac-

counts are being independently examined and recommendations made about our financial processes and controls. I report to the membership will be made when this is available. *(next month Ed)*

The trustees confirmed that our strong financial position is leading to a review of certain activities including birthday parties which are a big commitment for the very few members involved.

Jim advised the after 50 years involvement with the club finances and 40 years as club treasurer he would be standing down in April 2024 when the role of club treasurer will be taken by Stephen Millward.

Three trustees were due to retire in rotation at this meeting and there was one unfilled vacancy. The chair advised that nominations had been received for Stuart Kidd, Peter Culham, Nigel Penford and Donald Pickett. There being no other nominations these were declared elected.

John Billard declared that it gave him great pleasure to award the Presidents Cup to Jackie Lunnon for her unstinting service to the club, particularly assisting at birthday parties and public events where her help is greatly appreciated.

During Any Other Business members raised possible improvements to the members toilet, work on the raised track carriages, action on fitting a defibrillator and whether it was possible to have a club first aider. The meeting agreed that it will be preferable to provide basic training for members rather than an individual who might not be present when the need arises. It was agreed to arrange restocking and checking of the first aid cabinet, plans for the workshop refurbishment and the fitting of a hearing loop to the club house. Discussion took place about safety precautions to prevent a locomotive running away from the train.

All the above matters will be considered by the trustees at its future meetings.

The chair thanked those for attending the meeting which was closed at 2045.

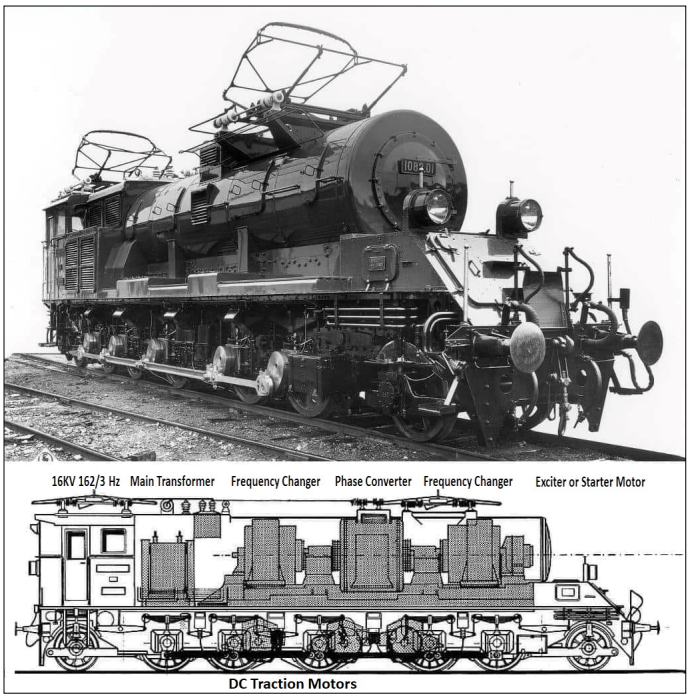
Free!! Complete (I think!) volumes of "Model Engineer" 1942 – 1952 inclusive. The magazine was smaller in those days and the whole lot are in a couple of cardboard boxes that fit easily on to a normal-sized shelf. The wartime issues are especially interesting and of course there are numerous articles by such worthies as L.B.S.C., Edgar T. Westbury etc.. If you would like them please give me a call on 07799 707301. I could bring them along to the Thursday club night if that would help at all. Alan Broodbank

POWER IN DISGUISE

by Alec Bray

All of us who live in the world of model and miniature railways are all-too-familiar with the machinery which is powered by one means but is designed to look as if it gets its motion from something else entirely – so we have steam-outline locomotives powered by diesel engines, and diesel outline locomotives powered by batteries and electric motors, and perhaps even electric-outline locomotives powered by clockwork …

These changes are usually made to aid easier starting a running session, to make maintenance easier or to get users trained up faster. Although it is quite possible to run "00" (4mm scale) live steam locomotives, it takes far more organisation to get a complex layout successfully running with those small-scale live steam locomotives.

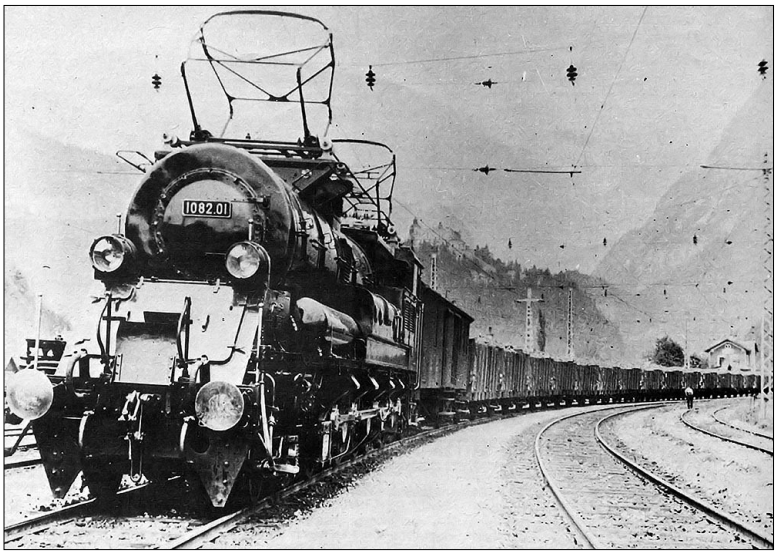


In the world of the full-size railway, most locomotive designers have been content to let form follow function - a principle of design associated with late 19th and early 20th century architecture and industrial design in general - in which the shape of an object should primarily relate to its intended function or purpose, or the means by which the ultimate functionality is delivered.

Because of this, the basic design of a steam powered locomotive did not change - Cab (locomotive control station) at one end of the main chassis, giving direct access to a furnace, which in turn was used to create pressurised steam in a (usually) cylindrical pressure vessel.

Quite a stunning sight, this 2-10-2 locomotive number 1082 01, its five sets of coupled wheels whirring, hauling a freight through the Austrian Alps. But it is NOT a steam locomotive! It is full-on electric.

At this time, the Austrian power supply was single phase at 16 and 2/3 Hertz, and this just was not suitable for adequate control of the single-phase motors of the time – there could be no gradual increase in power. In 1923, engineer Kando tried to overcome this problem with two test locomotives: 1180 had large wheels and 1470 had smaller wheels. The single-phase voltage of the overhead line was converted into 2,3 and 4 phases using rotary converters (basically big electric motors permanently attached to generators), allowing several different kinds of current to be supplied to the motors, The result, despite the 2000 kW developed, did not live up to expectations and the two projects were shelved.



These projects, however, led to the "1082" project which began around 1931, in which Siemens supplied the electrical equipment and the Floridsdorf locomotive factory took care of the mechanical part. The result of this operation was decidedly original: for some reason, the electrical components were built into a cylindrical container, and a single cab was placed at one end. This all was placed on a long coupled wheelbase which made the resulting prime mover strikingly resemble a steam locomotive, without a chimney it is true, but equipped with two pantographs as if the water was heated by electricity and not by coal...

The drawing on the previous page sets out the general arrangement for this

fascinating locomotive.

From the current collectors, electricity reached the main transformer via an oil switch and the main transformer. This was equipped with two secondary windings, which reduced the voltage to about 600 V. Using the phase converter, this single-phase alternating current was converted into three-phase current, from which two frequency converters generated direct current. This direct current was used for axle mounted sprung DC motors one on each of the inboard three axles, the outer axles driven by the coupling rods.

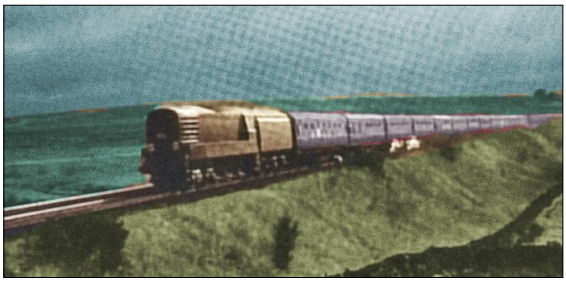
Oh, by the way, "… as if the water was heated by electricity and not by coal... "- yes, there were a couple of Swiss locomotives released in 1943 which took power from the overhead lines and fed this to heating elements in the firebox via a pair of transformers together rated at 580 kW. Boiler pressure was approximately 175 psi.

The photo credit on that electric-steam locomotive photograph is "Brown

Boveri", the same company that supplied the first gas-turbine locomotive to the Great Western Railway. The Great Western, however, had already been involved (from February 1946) in talks with Metropolitan Vickers about a joint venture to develop a gas-turbine locomotive.

The idea of utilising the recently developed (and developing) "jet engine" technology to locomotive propulsion was not just a Great Western interest: J.O.P. Hughes, the chief designer at English Electric, began to sketch out ide-

as for a gas-turbine locomotive during early 1946. Most of the Hughes' sketches showed various 4-8-4-wheel arrangement single-unit configurations of the prototype machine, but there were some drawings showing a design based on a (steam) 4-6-0 tender locomotive chassis (some rumours suggest a "Castle" chassis). It seems that, at that time, Hughes thought that the gas-turbine concept had the best chance of succeeding if it incorporated as much conventional technology as possible, and he rejected the diesel-style body with electric transmission (as used for the Great Western gas-turbines) in favour of a design using a traditional chassis and using a mechanical transmission, and so hoped to avoid any anticipated complications with (at the time of its conception) relatively untried technologies for bogies and electrical transmission. But bogies and electrical transmission were used not only on the other gas-turbines, but as part of the diesel-electrical designs of the Southern Railway (10201) (design begun in 1946) and London Midland (10000) (announced in March 1947), both based on bogie designs and transmissions already proved in traffic.



In the event, the locomotive chassis resembled that of a Standard Class 5, the gas-turbine driving a flexible mechanical drive to the centre driving wheel axle (other axles driven by coupling rods). The tender (the underframe for which had been purchased from British Railways) housed the fuel tanks, a crew toilet, and the steam boiler for train heating (and associated water tanks). It also had a corridor connection allowing crew transfer between locomotive and coaches. The whole ensemble essentially looked like an air-smoothed steam outline locomotive.

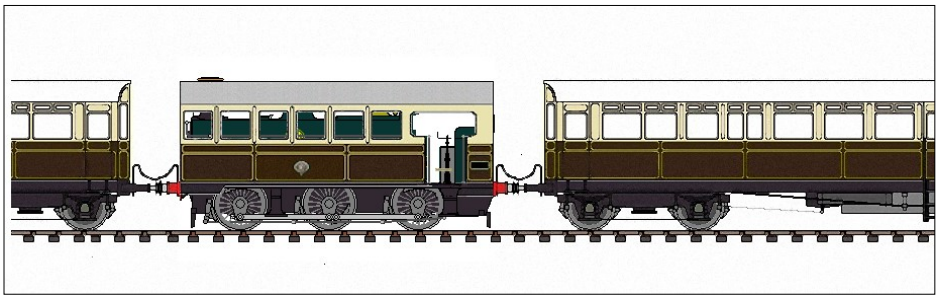
A colourised picture of GT3 - "the Chocolate Zephyr" - (from an original colour print) – shows it nearing Shap Summit on a test train of former Midland coaches (original photo: Colour Rail)

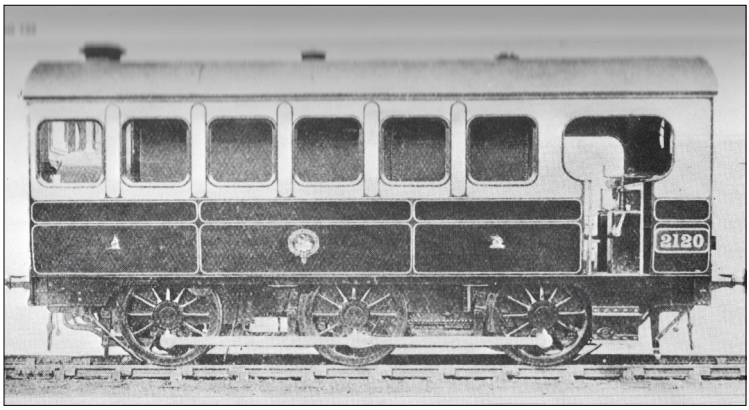
Whereas GT3 put recent technology on an old chassis, another engineer was busy putting old technology on a new chassis. This followed a review of the Southern Railway's steam locomotive fleet in 1944, which resulted in a resulting in a Southern Railway design brief requiring a high-powered locomotive, with high route availability, that could be used on both passenger and freight trains, and that needed little maintenance: the locomotives were to replace ageing M7 class tank engines. Oliver Bullied designed Leader with the boiler, firebox and smokebox encased in steel sheeting, which went further than the cladding used on the "Merchant Navy" Pacifics and the WC and BB Light Pacifics and meant that the locomotive's external shape made it

look similar to the contemporary diesel or electric locomotives.

Leader displayed outstanding steaming characteristics and total traction from the two power bogies on its trial runs. But both during the locomotive build and the subsequent trial runs, the inherent unsuitability of encasing a steam boiler in an enclosed superstructure was apparent. The environment inside was highly unsuitable for both the driver and fireman, the weight was prohibitive, and necessary maintenance such as boiler washouts could only be achieved by a major dismantling of the locomotive. In fact, the outer body panels had to be removed if there was a need to examine or repair any boiler parts. Even filling with water proved difficult as the water filler point was higher than most station water crane hoses could reach. One advantage, however, was that the external cladding allowed Leader to run through the standard carriage cleaning plant.

One railway company took the idea of cladding a steam locomotive in a carriage body to the extreme: the Great Western Railway! The use of the integrated engine and coachwork Railmotors on branch lines had stimulated demand, so the Railmotors were replaced by locomotive-propelled push-and-pull autotrains. If more than one autocoach was used, the locomotive would





usually be marshalled between the coaches, as 'play' in the control linkages could otherwise make operation difficult. So there would be this locomotive halfway along a train otherwise formed of coaching stock.

Two Great Western Pannier Tank 0-6-0Ts, numbers 2120 and 2140, which were auto fitted and usually ran in the centre of such a four-coach formation, had a dummy coach shell fitted over them so that they looked like their carriages ((J H Russell 1975 p.44). No known photographs exist of this set-up: here is an artist's impression of how the locomotive might have looked like as part of the train.

A couple of 517 class 0-4-2T tanks, numbers 533 and 833, were also clad with a coach body to 'harmonise' with the auto coaches for push-and-pull working. This was done in 1906/7 and the locomotives ran in this form until 1911.

Number 833 pauses at Trumpers Crossing Halte around about 1906/7. 833 was built between 1873 and 1874 by the GWR at its Wolverhampton works. All of the 517 class locos were withdrawn and scrapped by the mid-1940s, their duties been taken over by the 14xx class: none of the 14xx locos wore the coach bodies!

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BUILDING A CLAUD by John Billard

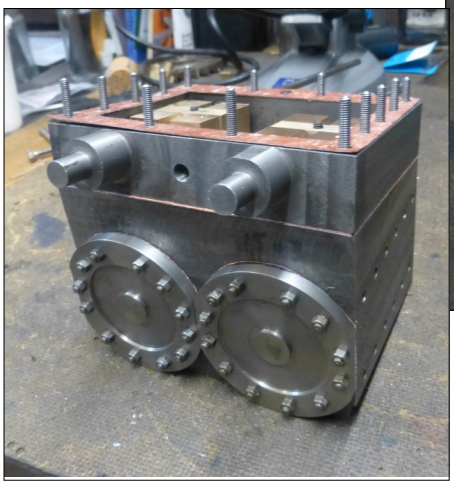
The Cylinders Continued

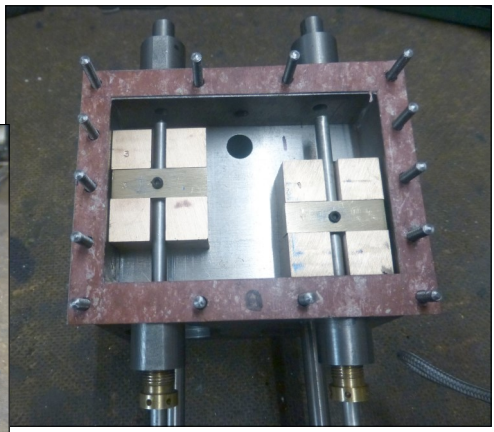
Having completed the pistons, work has continued on the slide valves and their driving nuts. These are fixed to the valve rods by 4 BA grub screws that are tightened finally on valve setting.

Studs have been put into the main casting to secure the valve chest casting and the valve cover. The latter includes the bogie spindle (not shown in the photos).

The latest job is to attach the front cylinder covers. This makes the job look more workmanlike. The photo shows the cylinder inverted as the valves are at the bottom. I will have to give thought to the drain cocks. I'm thinking at the moment that one to serve the valve chest will be sufficient—possibly steam operated? (any ideas?) Also some spring arrangement might be wanted in the valve chest to keep the valves in place (again—any ideas?).

Below Cylinder is shown inverted.





Photos John Billard

DIARY

DECEMBER 2023

Saturday	2nd	Club running	10.30 onwards
Saturday	**9th**	**Santa Specials**	
Sunday	**10th**	**Santa Specials**	
Thursday	**14th**	**Club Christmas Lunch**	
Thursday	**14th**	**On the Bench Night**	**19.30**
Saturday	**16th**	**Santa Specials**	
Sunday	**17th**	**Santa Specials**	
Tuesday	19th	Club running	10.30 onwards
Thursday	**21st**	**Quiz Night**	**19.30 onwards**

JANUARY 2024

Sunday	7th	Public running	Setting up from 09.30 onwards
Thursday	**11th**	**On the Bench Night**	**19.30**
Saturday	13th	Club running	10.30 onwards
Monday	15th	Trustees meeting	19.30
Thursday	**18th**	**The Parsons Turbine By Bill Richardson**	**20.00**
Tuesday	23rd	Club running	10.30 onwards

Note from the Editor. Please provide photographs as separate files and not embedded into the text. No pdf files please.

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

The deadline for the January issue is 20 December

Contributions may be submitted in had or soft copy to the editor.
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Comments by RSME members on any subject appearing in Prospectus are welcomed by the editor.