MAIDSTONE MODEL ENGINEERING SOCIETY

Summer 2020

www.maidstonemes.co.uk

Maidstone Model Engineering Society

Summer 2020 Newsletter

Your Committee

The committee exists to serve the club, to look out for the clubs interests and to make decisions on behalf on the club and its members.

Each committee member has volunteered and been elected by the membership at the AGM.

We are you're committee, if you would like a point raised, either write/email to Martin, or talk to one of us and we can raise an issue on your behalf.

Chairman - Tom Parham

Secretary - Martin Parham

Treasurer - Edgar Playfoot

Press Officer - Luke Bridges

Sue Parham

Chris Hawkins

John Hawkins

Andy Bridges

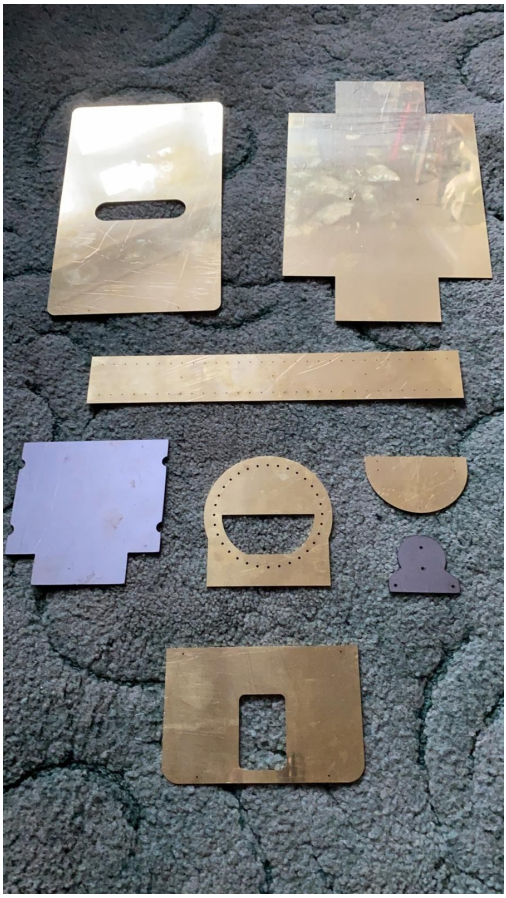
Chris Williams

Jack Ruler

** *Vacancy* **

Cover photo: A safe but active day at the club, many engines out for test

Luke's Spot



Hi all, and once again nothing is normal. Although, this newsletter is back to normal after imposed restrictions forced a slight adjustment to the layout and size of the last edition.

Progress has resumed on Northumbrian with my first set of self-CAD drawn parts back from laser cutter and have come out very nicely. Parts from tender sole plate and well tank, to smokebox front, door and wrapper, down to the tiny fire hole door.

On the topic of Trojan, she has been running well at the club so far this year until she developed an issue with her injector. A couple of injectors later and the most unlikely one worked, the old grubby one from our Polly 6 - no injector likes hot water but at least this one picks up from a fresh top up of water into a hot tank.

Hopefully more progress on putting Northumbrian together in the next issue - although might also be putting my new workshop up so will be progress of some description!

Bantam Cock was running well until the injector clack decided to play up and pretend it didn't have a ball in it - not the easiest fitting to remove for cleaning and checking, so will wait until I have my own bench to work on.

I hope you're all staying safe and well, and see you at the club again soon.

Join our members page at facebook.com/groups/Maidstonemes
And like our public page at facebook.com/maidstonemes

At the park

General Works - Jack Ruler & Maurice Knott

A replacement man hole cover for the cess pit has been obtained and is in the process of being painted and fitted.

Damage has been found to some of the railings, the station facia boards and clubhouse roof. All are in the process of being repaired or repairs planned.

The yellow and white lines have been repainted around the steaming bays by Charles and Bernie and the signage is gradually being renewed thanks to Charles again.

Household and Catering - Sue Parham & Chris Williams

Our water supply pipe has been flushed out by the supplier and has been flushed at the club to make sure water is clear and clean of impurities.

Public Running - Sue Parham & Chris Williams

Nothing to report - sadly.

Safety - Tom Parham & John Hawkins

The council have requested details of our Covid-19 risk assessment. This has been reviewed and supplied.

A new HSE document for miniature railways - HS2020 - has been produced and reviewed.

It has been agreed to keep a maintenance log for the petrol locos.

Permanent Way - Chris Williams & Peter Kingsford

The carriage traverser has been tweaked during the hotter days to adjust clearance to the new transition pieces previously fitted. They're running well.

The track has been found to be under gauge in a few places and has caused a couple of derailments - this is being rectified and being monitored.

It was also found that in some places the 3 1/2" rail was higher than the 5" rail, this will be corrected by adjusting the wedges.

Fuel - Tom Parham

Coal and petrol are now in stock.

Club Locos - Tom Parham

Enterprise - Has had its steam test, no issues

Gertie - Undergoing maintenance to running gear and gearbox amongst other areas. Currently partially dismantled on a wooden trolley in the workshop.

SNCF - In working order

Doris - Has been steam tested, no issues.

Rolling Stock - Andy & Luke Bridges

All of the rolling stock has been inspected and cleaned. Graham's trollies wheels need attention and next year some brakes may need attention.

Unloading Bay/Lift

The unloading lift has been completed as is printed on pg 18.

IMLEC

Imlec has had to be postponed due to the outbreak. This is being re-scheduled to July 2021.

Other work

There are other minor jobs that need attending too from painting to track and building maintenance. A job list is being maintained at the club next to the sign in sheet. Anyone is free to tackle a job on the list, just let one of the committee know so it can be checked off and please ask for help where required or unsure where something is or how it should be done.

Modern steam is alive! - Luke Bridges

Modern steam is alive, very much in use and not just in miniature.

Martyn Base's excellent site (www.martynbane.co.uk/modernsteam) list's many examples of modern steam running around the world and lists the work of a group of engineers still developing and pushing modern steam forward. It is from here that I take inspiration to try things.

From examples in Germany, Switzerland, South Africa and Argentina right up to railways and engines running in the UK today.

In 1997 Ing. L. D. Porta during a lecture in Buenos Aires categorised steam development into "generations" roughly as follows

0. Engines built around and before the 1920's and 1930's
1. More "recently" built locos such as UP Big-Boys, New York 4-8-4's, the post-war BR standard's and German standard designs
2. Locos which is possible to build today incorporating technology and refinements from the 1950's till today
3. Yet-to-be developed engines

As a point of reference he suggests that A1 "Tornado" would fall into generation 1.5 if it should exist. As being an older design although employing some later technologies bridging the gap.

Indeed some very well known lines use these ideas. And in many cases well concealed so as to appear invisible - and it is this idea that appeals to me in my experiments.

A great example would be the Earl and Countess of the Welshpool and Llanfair Light Railway. Nigel Day between late 1993 and early 2000's went about re-draughting the WLLR's entire fleet. No's 1,2,10,14,15 and 19 have all been successfully redraughted with full Lempor exhaust and for the most part fully concealed in their original chimney's as to leave their appearance unaltered.

Indeed it was while examining the WLLR fleet that they discovered what they termed "Monarch Syndrome".

Monarch Syndrome was described by Nigel Day as

"*The exhaust steam does not fill the chimney*"

He goes onto say that the effect of this is that the vacuum created by the blast has almost no effect on the fire because air is drawn back down the chimney due to

"*no seal is made (the steam must touch the inside of the chimney to make a seal) in the chimney*"

Drawing air through the fire has more resistance than drawings air back down the chimney, resulting in almost no draught on the fire.

Monarch being the ex-Sittingbourne Bagnall Mallet now at WLLR.

All the rebuilt WLLR locos are now more powerful than before and consume less fuel to do the same job.

Onto the 15" Kirklees Light Railway next we have a fleet of four named "Fox", "Badger", "Hawk" and "Owl" that have all benefitted from a greater rebuilding in the late 1990's to 2000's.

All four have been fitted with simplified versions of a Gas Producer Combustion System, an innovation which Porta first introduced to locos in which very little combustion air is allowed through the grate and most is fed in over the fire bed. This is only possible with a well proportioned and fitted fire arch. A small amount of steam, normally from the exhaust is also fed in under the grate and drawn up into the fire to cool the fire bed further. At first one might think how can that work and indeed it does need things to be in the right proportions and a very deep fire but it can work and does work well as follows and is very similar to "coal gas" in early town gas supplies to homes.

Basically by the coal bed being "cool", an exothermic reaction takes place producing a gas mixture of Carbon Monoxide and Nitrogen. By mixing in the small amount of exhaust steam, Hydrogen is also produced in the mix and clinkering reduced by the cooler bed. This gas is then burned in the air drawn over the fire through openings in the firebox sides or the fire hole door. Typically 70% less air is drawn through the fire, less particles are carried over unburnt up the tubes and out the chimney, more complete combustion takes place, emissions are lower and much less fuel is

burnt.

David Wardale states the following in his Red Devil book :

"*Another important requirement for effective gas production is that the firebed be deep. Ideally its depth should be at least 15 coal particle diameters in order to ensure that the maximum amount of carbon monoxide is produced from the reaction between the carbon in the coal and the available oxygen in the primary air.*

However, an increased firebed depth combined with the exothermic (heat producing) reaction results in higher firebed temperatures and therefore an increase in clinker formation from ash fusion. This can be countered by the introduction of "clinker control steam" into the ashpan which has the effect of reducing the firebed temperature as it passes through the coal particles because it undergoes and endothermic (heat absorbing) reactions in the form of:

$$C + H_2O \rightarrow H_2 + CO$$

$$C + 2H_2O \rightarrow 2H_2 + CO_2$$

Both reaction result in hydrogen gas which gets burned off with the secondary air, and the first reaction produces additional producer gas (CO) which also gets burned off above the firebed."

This was successfully used by Wardale in South Africa on his Red Devil Class 26 and a rebuilt Class 19D.

Back to the Kirklees and their system admits secondary air through inlets in the firedoor, distribution air evenly over the fire.

Combined with Lempor exhausts and Porta water treatment and roller bearings throughout has transformed the locos on this line with steep gradients.

I'll give one more example before I leave you to explore the potential and already proven applications of "modern steam".

The Bure Valley Railway in Norfolk. The bulk of the line's fleet were initially a class of ZB locos built by Winson - modelled on locos of India and Pakistan. The line has gradients of up to 1 in 32, line speeds of 20mph and on the 15" gauge with trains of around 13 coaches. Our case study will be of a single loco - "Mark Timothy" - built to the ZB design but modelled originally on a County Donegal Joint Railways 2-6-4.

Almost immediately it was returned to Winson for fault rectification and on return was still unsuitable for service. Further rectification by Winson was impossible as they had gone out of business.

This work was then contracted out to and picked up by Alan Keef Ltd to correct the fundamental errors and make other improvements.

A detailed article can be found here - http://www.steam-loco-design.co.uk/zb_article_1.html but I'll summarise.

During rebuilding it was decided to remodel the loco on the Leek and Manifold locos which were better suited to the outline and sizes needed.

The loco was redraughted, whole new and larger cylinder blocks made with much superior exhaust and steam paths, valve gear proportions and timing altered, a Kordina and Lempor exhaust fitted and much larger bearing surfaces in the motion - amongst other more numerous modifications.

After the work was complete, a team from the Tallylyn came and fitted electronic measuring equipment, the same as they had previously used on their own locos.

It was compared to a "standard" (almost standard as some limited in house work had been done on these) Winson loco and the following found:

Mark Timothy had a drawbar pull of 7.5KN against a standard 5KN.

It had -15mm Hg smokebox vacuum against -11 to -8mm Hg standard.

Cylinder back pressure was reduced from between 3 and 4.5 bar down to 1.65.

Maximum drawbar horsepower was measured as increasing from 35-40 to 63 with potential of much greater with better adhesion and clean descaled boiler.

I could and do spend hours reading, watching and discovering all that is possible to transform a badly running loco or a well running loco into something much more economic, capable and free running. All for in some cases very little extra work and expense if its got right.

Now how to measure and prove it works in our scales??? (more next time)

Chairman's Report August 2020 - Tom

Well, this has been a very different few months to what we had been expecting at the beginning of the year. At the last full newsletter we were only just heading into the pandemic and had not been into full lockdown yet. How times changed, and rapidly at that… as a club we had to completely close our site for quite a while, although modern technology did help a lot to keep those who needed us (and have the technology) in touch. We started to have evening meetings every two or three weeks via the online conferencing programme Zoom. We were fortunate enough to have some fantastic and extremely interesting talks from Andy Nash, Richard Linkins and Andy Hardy on a range of railway related subjects, as well as a couple of quizzes hosted by Amy. Most recently (at the time of writing it has just finished) we had a bits and pieces evening with the ability to share photos of current projects that members have been working on. It's nice to see that we've been staying safe, tucked away in workshops with plenty of progress being made on various projects. I am not sure yet, however it is thought that the zoom meetings may be a long term feature of the club social side. For the last few years we have stopped having our Friday night meetings during the winter months, however this may give us a winter option, who knows, we may well play it by ear and see what's popular and what works for us as a club.

As for now… the club has been open for a little while for club members to attend for running and work around the site, I've lost count of the number of boiler tests that I've done in the last couple of months. (If anybody is in need of a test then get in touch and we will arrange a time to sort one out for you.)

Without going into too much detail about what's been going on, because I don't want to miss anything out and miss thanking anyone, a couple of the jobs I've been involved in have been finishing the unloading hydraulic table, completing the traverser rail joints and realigning the sidings. In addition to this, we have had a fair amount of strimming to get the track to a usable state as well as painting etc, all the odd jobs that are regularly needed. I would like to offer a massive thank you to all that have been involved in all of this.

It's been great to see the spirit amongst the members that have started to come back down to the club, and it has also been great to see people running around the track again just for the fun of driving with no need to pull passengers, although this in itself does feel like something that's missing from our routine. I for one look forward to being able to give rides again, when it's safe to do so, although I hope we don't forget the rediscovered love for running for ourselves.

A little bad news, during lockdown we had a couple of vandalism issues early on, fortunately not as bad as things could have been, but still an annoyance. The worst bit however has shown itself in the last week (at time of typing). We have had a hole appear in the clubhouse roof, almost directly above the distribution board. With the heavy rain that came down the area outside the toilets has been partially flooded. On Sunday everything had to be removed for drying and a repair made to the roof so that it hopefully doesn't reoccur.

To the future… well, I wish I could say what we are going to be doing, but with such uncertainty around everything, this just isn't possible. For a start IMLEC has had to be delayed, although I have been told that we will still host it next year. Our trusty Galloping Gertie is in the process of being stripped for some much needed maintenance, if you would like to help on this project get in touch with Jack or another committee member who would be able to point you in the direction of what's needed. We are constantly keeping an eye on government guidelines to see if we can allow more to be done at the club, we will keep you up to date if anything drastically changes, however for now social distancing should still be observed at the club, and the clubhouse is not to be a place to congregate and socialise. At present the facilities are open for members, however the clubhouse should not be used for sitting and socialising and I can't see passenger hauling recommencing this year; however this will be reviewed along with guideline changes.

So all that remains is for me to sign off with the most common phrase of recent times, Stay safe, and I hope to see you at the club soon.

Tom.

Snow White & The Seven Dwarfs

Thanks to Roger for sending me this as well as a few others for future editions - Enjoy!

The seven dwarfs always left to go work in the mine early each morning.

As always, Snow White stayed home doing her domestic chores.

As lunchtime approached, she would prepare their lunch and carry it to the mine.

One day as she arrived at the mine with the lunch, she saw that there had been a terrible cave-in.

Tearfully, and fearing the worst, Snow White began calling out, hoping against hope that the dwarfs had somehow survived. 'Hello...Hello!' she shouted. 'Can anyone hear me? Hello!'

For a long while, there was no answer. Losing hope, Snow White again shouted, 'Hello! Is anyone down there?'

Just as she was about to give up all hope, she heard a faint voice from deep within the mine, singing;
"ENGLAND FOR THE WORLD CUP".

Snow White fell to her knees and prayed, 'Oh, thank you, God! At least Dopey is still alive.

Your Club Needs You!

I would like to take this opportunity to thank Maurice for all he has done for the club in his time on the committee, his recent unfortunate departure from the committee has left a vacancy that should be filled. Should anybody wish to put their (or someone else's) name forward then please let us know, or if you would like to find out more of what's required then we would be happy to have a chat with you.

You don't have try and fit any particular role to have a say in the running of the club, no previous experience or skills necessary, just an opinion and a willingness to participate in discussions.

Brent House 5” private railway visit – Stewart Christensen

A small group of members were invited to visit Brent house 5” private railway at the end of June . The railway is situated in the grounds of a residential home in Cambridgeshire, it is a fully signalled 5” ground level double track mainline with a spur leading off to a terminus station (Brundel Gardens) and various marshalling sidings. The line up of engines brought by the club members ranged from the smallest (a Terrier) right up to Martins ‘Duchess’.

Myself and Tom had brought some of our own rolling stock along but it was most definitely not needed as there were literally rakes of wagons and coaches everywhere! Tom was the first to get steam up with his Jinty and quickly nabbed a nice 5 coach mk1 set. He was quickly followed by Luke and Simon which both had a large mixed freight train, Alex however had

opted for some shunting with his engine 'Joan' takes all sorts I suppose!?!

I on the other hand was having a nightmare trying to oil the inside valve gear on my Terrier which isn't the easiest of tasks to achieve on a raised steaming bay let alone on the ground. A solution which involved no hand shunting was quickly found and the job completed.

I then joined in with the others hauling a smaller mixed good train. The last of the locos off shed were Martins Duchess and Richards Standard Class 2. Unfortunately the Duchess kept derailing due to the extra weight on the tender and returned to the shed after a short while, but not

before hauling a beautiful 8 coach set of Pullman coaches which the owner of the railway seemed to just have stashed in a shed for such a fine locomotive. Once these became available they were quickly claimed by Simon to behind his loco 'Jack' which hauled them with ease.

My Loco or more likely my back lasted around 2-3 hours before I'd decided enough was enough and the Terrier and her train was towed back from Brundel Gardens to the sheds by an 08 shunter, an undignified end but hey ho I know when to give up!

The other members on the other hand didn't and ran for 6 hours plus only briefly stopping for the BBQ that myself and Alex had cooked. Simons loco even developed a block in the blower pipe which He rectified and re steamed, by which time his Pullman set had been stollen by Alex to go behind his dads Class 2 this became the last loco back on shed shortly after Luke's 'Hudswell Clarke' (ed: Trojan) locomotive.

The weather was glorious and Brent the owner and his regular helpers were all very friendly, welcoming and accommodating. We have been invited back and I'm sure take that offer up in the very near future.

(note from me : This was a brilliant day of shunting, sharp gradients, heavy -ish rakes, long trains and a novelty - points!!! You can go a different way and everything! I for one would very much be up for other club visits to railways, raised or ground level. Each offers a very different experience and different kinds of fun to be had.

I wouldn't want to run ground level all the time, after a while its nice to get up and walk around - and we think its bad enough on a raised track.

It is very interesting to be doing a few laps then rounding a corner finding the signaller has routed you down the branch line, then having to cross the mainline on the level, run down the single track branch, run round and or be shunted out, then back out of the branch possibly now doing laps in the opposite direction entirely with very probably a different rake to that you took down the branch.

A brilliant day and not one to be missed for someone wanting something different or wanting to experience a non-passenger hauling side to the hobby - plenty of Youtube videos for anyone wanting a gander)

The New unloading lifting table - Tom Parham

You have probably read elsewhere in the newsletter over recent editions that we have been installing a hydraulic lifting table to assist with unloading/loading locos from/to cars. This has now been completed bar any adjustments to overcome teething issues. You will see on the car facing edge a large pedal and a small lever. The large lever is for pumping the lift up to the required level, we have also adapted the old steel traverser ramp to be a flat plate ramp to assist in unloading. Here's how I use the lift…

1. Pump the table up to approximately the correct level for my car
2. Put the plate from the car to the table (when the loco is in a frame on rails I raise the car end of the ramp by putting it onto a block of wood to match the level of the rails)
3. Pump up more if necessary for a level ramp.
4. Roll the loco over the ramp onto the table.
5. Remove ramp.

6. Gently lower the table using the small lever.
7. Roll the loco onto the bay keeping an eye on the wheels to ensure they land on the rails (there are guides fitted to the table top to help line the loco up with the rails).

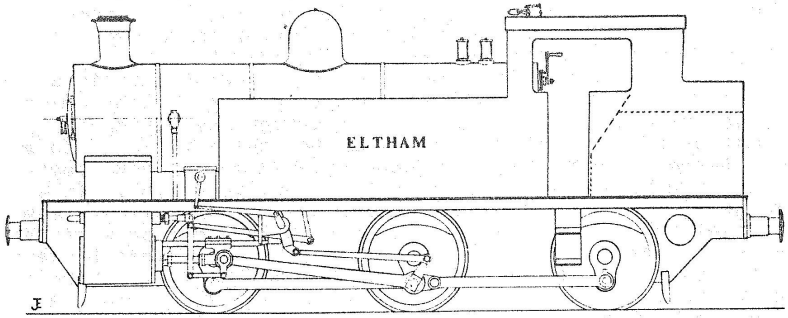
Loading is the reverse procedure.

Personally, I find this system pretty easy to use, as there is no need to get the car in line with the rails perfectly, and as the ramp is a flat plate the distance from the table is not critical either. A lot of time, though and effort has gone into providing this facility, and I hope that it will provide a more universally friendly system to help members unload their locos from cars.

(notes from me : I have found this much easier to unload from than before, my car floor is low enough not to need to raise the lift, but even having a larger flat pad to aim for is much better, no alignment issues now)

A blast from the past - Summer '84

The Choice of an Engine for Club Work
with
Suggestions for Improved Design
by
Jim Ewins



The majority of clubs which operate continuous tracks rely financialy upon the revenue generated by carrying the Public. Many club members who join in this operation succumb to the desire to have an engine suitable for this purpose. Thus the question arises as to what sort of engine to obtain or build. Often the individual is motivated by a certain prototype that has taken his fancy and after many years of effort or the expenditure of a large sum of money discovers when the engine is put into service that it never seems to be as satisfactory in operation as some others of relatively modest pretensions.

The majority of models are made to published designs and their suitability for any particular duty is rarely considered. This arises because of a lack of running experience on the part of their designers of the sort associated with continuous passenger hauling tracks. In speaking of design I do not mean only the technical requirements for good performance but I also include the convenience of the driver, ease of maintenance, ease of transportation and longevity. Published designs suffer from a conservatism which inhibits change and effectively holds the art as it was in the L.B.S.C. era. L.B.S.C. never operated on a track such as ours at Maidstone and under the conditions which prevail there on a Sunday afternoon. His designs therefore were not always good for this type of operation and were prone to wear out rapidly if subjected to too much of this use. For the past 25 years I have directed my attention to the problems mentioned above with the result that I have come to some pretty firm conclusions which members contemplating a new venture might like to consider.

One of these conclusions is that a tank engine is a lot more convenient than one having a tender both in use and during transport. Also tank designs lend themselves to the concealment of the ballast so necessary for the engine to give a good performance. A snag however is that tank water gets hot making the reliable operation of injectors uncertain but this difficulty does not occur if the design is one having a capacious bunker tank which can be kept separate from the side tanks. In addition a large bunker tank permits a good

space for the accommodation of coal thus contributing to a self-contained unit which is very convenient in use and compact for transport. Many years ago the Eltham society resolved to build a club loco and I was commissioned to produce a design the outline of which is reproduced above. It will be observed that this design complies with the requirements just mentioned and many will notice a distinct resemblance to the Simplex design. This is pure coincidence my design having pre-dated the Simplex by a year or two but the significant difference is in the bunker which in Simplex is so small as to be usless for either coal or water accommodation.

There are those who do not like tank engines, it is a question of " chacun à son goût" and if one has a long reach, does not mind carting two components around and having to connect up pipework at each run then the thing to do is to go for a narrow firebox tender design which does not have bogie or pony trucks to take away valuable adhesive weight. In a tank design weight carried otherwise than on the drivers can be offset by ballast (possibly in the tanks), but on a tender engine with narrow firebox the opportunity to include ballast is much more restricted. Why a narrow firebox then? Here we come up against the basic question of design which revolves around grate loading. This factor relates the size of the grate to the demand upon it by the engine and the load it is hauling. There many aspects of design which modify grate loading but generally speaking in a model the loading is too low for the most effective working of the engine, a situation which is evidenced by sluggish and unresponsive characteristics particularly in respect to sudden load changes. This effect is exacerbated in wide firebox designs and can only be overcome by making them very heavy and working them hard. My 9F with 42 square inches of grate area is like this and is only really happy with 2 tons or more behind the tender. At Maidstone as at most other tracks we do not operate regularly with this size of load and so our purposes are amply catered for with about 25 square inches of grate area. Thus the best prototype to model is either the passenger tank or the mixed traffic tender engine. Both have narrow fireboxes and moderate size driving wheels.

Over the years I have collected data on the performance of many model locos and have related this to the observed characteristics of them. More recently I have brought this information together and expressed it in the form of equations which enable one to design with greater certainty of producing a well balanced result. It is relatively easy to design a loco that blows off steam copiously and some people even manage produce designs which fail to keep steam. If an engine is well balanced it will do neither of these things because of the automatic effect of the blast mechanism. Members interested in more information on this subject will find it in Engineering in Miniature Vol 3 No 12 May 1982.

A source of disappointment for many new-comers to the hobby lies in the increasing number of simple 0-4-0 designs now available on the market. These have the merit that being simple they afford a means for the beginner to get an engine on the track in the shortest time and with the minimum of expense. They are not however eminently satisfactory for passenger hauling. The difficulty usually arises with them because of their small wheels and short wheelbase. The small wheels operated from cylinders which are too large usually result in overloading the grate and tearing the fire to pieces if modest passenger hauling is attempted. They are after all industrial or shunting type machines not suitable for the express passenger duty which their drivers try to emulate. Additionally because of their

short wheelbase they try to do the 'bucking bronco' act which is most disconcerting especially with the narrow gauge specimens with their excessive top hamper. The popular AJAX design by Mr Fred Stone comes into this catagory and it is significant that Fred produced an 0-6-0 version to overcome this trouble. Had he at the same time reduced the size of the cylinders and/or increased the grate area, though not producing an 'ACHILLES' never-the-less a satisfactory passenger hauler would have resulted. There are some who aver that the original design is wonderful,- but then some are easily satisfied! I personally have cut one of these engines in half and inserted some extra frame steel, an operation hardly likely to have been condoned by its owner if he had been satisfied with its performance!

Readers will have gathered from what I have said above concerning a balanced design that there is a critical relationship between the various parameters involved. This is indeed true although there is considerable latitude here. Mr Kieller said words to the effect that "It is a pity, in a way, that a model locomotive will 'go' even if it is badly designed and badly made". This is very true and accounts for the acceptance of many indifferent designs which 'go', by those unable to discern the difference between good performance and otherwise. Poor design shows itself in two principal ways. Either the engine fails to produce enough steam when it is wanted and the blower has to be used in desperation, or it is constantly blowing off resulting in spurious overloading of the grate with consequent clinkering and grate burning problems. If a design is well balanced neither of these effects takes place excessively when the engine is used on a load commensurate with its capacity. Of course, with varying traffic conditions engines are sometimes called upon to operate outside their optimum range and it is under these conditions that a variable blast nozzle is so valuable. By this device the blast mechanism can be tuned to allow for contingencies and also for different load conditions. Heavier loading demands a larger blast nozzle otherwise excessive steam will be produced with the consequences mentioned above. And again if one gets hold of a rotten bit of coal a sharper blast could get you out of trouble.

We are usually exhorted to practise what we preach and this is indeed what I have done with my last two locos. Lode Star has certainly lived up to its name by hauling a record load of 89children at the Chingford track and contrary to what we are told by the 'sour grapes department' did actually start this load. It is however in a sense something of a white elephant being too big for ordinary passenger track use. My latest design "Jimmy's Riddle" is a much more satisfactory tool for the sort of loads usually met at Maidstone and indeed at most other tracks. The Riddle was designed using the formulae mentioned above with some allowance for an expected improvement in efficiency attendant upon the situation of the engine in the smokebox. It has in fact a grate area of only 17 square inches with an adhesive weight of 180 lbs. A number of members who have driven the engine will know how simple it is to use. Provided that coal is put on to keep the firebox level up and similarly the injectors are switched on to keep the water level up the engine looks after itself. Incidentally one of the reasons for producing this design was to debunk the idea that a model needs to ape full size practice and use large long travel valves with lead, exhaust clearance and large ports connected by short large passages. The Riddle has just the opposite to all

these 'desiderata' and I have yet to hear anyone complain about the way it goes. The fact is that in a model loco the steam velocities are about 'scale' and the length of the various passages are also about scale thus the pressure drops through the various parts are, to a first approximation 1/144 th. of those occurring in the prototype and are therefore insignificant. What does matter however is the vital necessity to have dry or superheated steam at all points as it passes through the engine. The resistance of wet steam is so much greater than the dry stuff that no matter how large you make the passages etc there will be a significant or great backpressure with it. The proper course in designing a model is to make ports and passages as large as is convenient and compatible with good mechanical design, use plenty of superheat and leave it at that. No need to bother about streamlined passages swept junctions and Swindon valve events with lead and exhaust clearance, forget all this. It is better in designing valve gears for models to concentrate on equality of cut-off and release as between front and rear of the piston in order that the torque produced at the driving wheels comes in four (or six) equal pulses. The secret of the ability of Lode Star to haul such large loads depends largely on the valve gear design which in addition to satisfying the above criteria also embraces a novel modification whereby steam is admitted twice at every stroke with a near cut-off at about mid stroke. This produces a drop in pressure when slipping is most likely to take place. At each of these admissions the valves are only just cracked open for a short while,- so much for the necessity for large ports etc and all that pseudo Swindon rubbish. It is just not true that copying full size valve gear design when modelling a given prototype yields the best result. It does't. Full size locomotive engineers were pre-occupied with the valve events occuring at the commencement of the stroke and at short values of cut-off. We in the model world do better as indicated above by obtaining equality of release at larger values of cut-off We are not concerned with pre-admission produced by lead which full size designs need to keep up high and level admission pressures at short cut-off. Following full size practice for models is a fallacious operation dearly beloved by G.W. fanatics ('Little Churchwards' I call them) who do not understand the basic physics pertaining to model locomotives. They seem to believe that what Churchward discovered to be good for 4'-8½" is also good for 5". What did Churchward know about model locomotive design?

Piecè de Résistance

I read in the current number of the Model Engineer that according to Keith Wilson steam passages offer less resistance if they are deliberatly contorted. Elsewhere in the same issue I read that contortions in a safety valve seriously reduce its discharge characteristics. To a simple soul like me these conflicting statements leave me baffled and so contort my mind as to cause severe resistance to the discharge of normal analysis. No doubt in the fullness of time Prof. Wilson will elucidate.

(note from me: Please read the above bearing in mind it was written 36 years ago, a lot has changed and needs to be read in context. Also please bear in mind, and it's the same as with articles I write, these are the views of the author and it is up to you, the reader, to judge its validity and to try things out yourself, after all we are all model engineers)

MMES DIARY DATES 2020/2021

IMLEC at MMES *Provisionally* 9-11 July 2021

For the foreseeable future, all club nights will be happening on a Zoom call and details emailed out the week or two before.

If you are not receiving these notifications, or would like them a different way, please let Tom know. If you would like assistance accessing the Zoom calls and meetings, also please let us know and well assist where we can.

COVID-19

When attending the club, please remember follow all social guidelines.

Extra signage has been put up at the club and a one way system in operation.

Any persons attending the club must sign in using the sheet on the table inside the clubhouse.

We are watching the governments guidelines and will publicise any changes that need to be made, either imposing or relaxing restrictions.

Stay safe.