The Oily Rag!

Autumn 2016 Issue No 127

Andy hides from the camera at the Steam Gala
Dr Spin reports on the event inside

The Taunton Model Engineers' magazine

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From the Editor

Getting this issue out has been a bit like pulling teeth, indeed it looked at one point as though the Autumn 2016 edition would be replaced by a simple news letter. Fortunately several contributions arrived just in time. So here it is, a bit late but hopefully a good read. Please can you get articles for the Winter issue to me by mid November so that you can have something to read over Christmas.

In my opinion, leaving most of the job of controlling a loco to some electronics makes driving battery electrics rather dull. So I found Jon Freeman's article on electric locomotive control particularly interesting and think it could show the way forward for this increasingly popular class of model. If you disagree you can always write to the editor!

This has been a particularly busy season with the highlight being the Gala. I think everyone who came agreed it was a very good event and one which hopefully will be repeated. If you did not make it Dr Spin's report will tell you what you missed.

I hope you enjoy this belated issue.

John

Chairman's Notes

By Mike Johns

Well our 70th birthday celebration has come and gone. The biggest event TME has organised for some years took place on 23 July when everyone who attended, members, visiting clubs and public seemed to enjoy themselves at our Gala at Creech.

This was the first time we really exploited the facilities we have there and we were able to stage not only regular railway services between the two stations but also an exhibition of member's work and traction engines in steam, plus the support of visiting clubs, the trade in the form of Helen and Geoff Stait all backed up by a suitable snack bar etc. Once the public had left we were able to enjoy an appropriate birthday cake and launch the new Hymek locomotive 'Noel Whiting' which was unveiled by his widow Rosemary supported by son Chris.

Your committee has already commended the organising sub-committee for their work and I would take this opportunity to express all our thanks to everyone who contributed in whatever way they could for an excellent day. TME maintained its tradition for holding informal events in an organised manner. Thank you everyone.

A number of you will be aware that we have been holding discussions with Taunton Deane BC regarding the facilities we enjoy in Vivary Park, particularly the use of the pavilion. The Council in July formally advised us that we should cease using this building from the 31 December this year. We responded formally acknowledging receipt of their letter and pointing out that we have a published programme to maintain until our Santa running day on 11 December. Although little has happened during August we now expect to meet the Parks Department on 30th August to initiate discussions on provision of alternative facilities, particularly for equipment storage, in order to sustain our rail operations in 2017. We will keep you up to date on progress at our regular meetings or by circular if any critical issues arise.

This neatly leads me in to our winter programme. The first meeting in our twice monthly programme at the Stoke St. Mary village hall, was given by Mark Davis, a man of many parts. The previous "Oily

Rag" gave details of the first half of this winter's programme, this edition should cover the remainder. I look forward to seeing you all there and particularly our newer members so that they can all be welcomed.

News from Creech

Congratulations to the Thursday gang for the efforts they and other members able to help made in getting our site up to scratch for the July Gala – it has never looked so smart before. The challenge now is to keep it like that!!!

The regular gang has since turned its attention to track maintenance as the intensive use it has received recently has identified a number of problems to be resolved. These are a combination of unfinished works, poor ballasting and the effects of some very high daily temperatures causing temporary track distortion. This in spite of the programme of fitting expansion joints in key areas carried out about three years ago. The other jobs– grass cutting, hedges etc. – will continue but we have decided that the work needed to our boundary fence is best done by a contractor to expedite the repairs needed.

In spite of Tim Griffiths' best efforts with the ride-on mower we have since had to get a professional assessment of its condition which David Hartland arranged. This has confirmed it is basically sound provided certain jobs are done and which are in hand. Meantime, thanks again to David, we now have second ride-on mower on site on loan which in Tim's capable hands has already made a significant contribution to grass cutting.

The indoor squad of John Pickering, Mark Hartnell and Andy Cooke

succeeded in getting the three new riding vehicles into serviceable condition for the Gala when we had three trains working regularly utilising the six TME vehicles plus one on loan from Mark. Unfortunately the new vehicles, which have bogies very similar to those on Mark's vehicle have tended to derail rather too frequently depending on loading and track condition. This is being investigated urgently as there is a suspicion that there is a lack of flexibility in the suspension which needs to be cured. (Test report on page 8)

Although the new Hymek was launched at the Gala, its painting having just been completed in time, there are a number of jobs outstanding on this and Martin Rickitt's locomotive before each can be said to be finished and which John Pickering will be continuing with.

Passenger carryings on running days continue to be good and it is noticeable there are often more people riding our trains than using the park. We did not take a headcount at the Gala as rides were included in the overall ticket price for the event. Suffice to say we opened at 10.00 for the first visitors and were running three trains regularly from 12.30 to about 16.15 when we had to run an empty train to the Far station to bring back the last stragglers. Thank you to all stewards not only for the Gala but also who turn out on the regular running days. Your support has ensured we have run when planned since Easter.

Report from Vivary Park

By Julie Harvey Smith

It has been a quieter year at Vivary, especially at the Flower Show where takings were down 50% on last year.

Repairs and routine maintenance near the first lift-out section have been effective with fewer derailment problems. Thanks to Phil, Dave, Mark and the team for all their hard work.

Rock cakes?

After more than three decades Taunton Deane council have given us notice to quit The Pavilion before the end of December. We are hoping ongoing negotiations will resolve the problem enabling us to continue at Vivary Park. We will inform you all when we know more

Taunton Flower Show 2016

A report by Julie Harvey-Smith and Jon Freeman

The first day of the Flower Show started quietly. In previous years, a gate between the flower show and the railway and play area had been in place but this year there was no gate and the railway was hidden from flower show visitors behind caravans, generators and a wall of clutter.

There was no shortage of locos and drivers but we talked about packing up and going home early if it remained quiet. Then things livened up a bit. Julie was driving 'The Wedge' when a group of girls turned up, bought their tickets and went for a ride. When it was over, one of them said it would be fun to go round again.

The others all agreed. With no other fare-paying passengers in sight, Julie decided to give them another two laps – and another two – and another few! As this anarchy and chaos unfolded, Jon was punching the tickets again and again 'til there was nothing much left to punch. The situation developed into a 'sit-in' where the words 'Girl Power' were bandied around. With driver and passengers all having a thoroughly enjoyable time, with Barney supplying the girls with cola, the girls would hop off when rare fare-payers did trickle in to resume their free fun afterwards.

But then the rules took a little bit of a stretching when one of the girls asked if she could drive. Julie looked at Jon, Jon looked at Julie, and we both looked to Phil, and said “why not!” That was when the first of them took the controls and drove “The Wedge” around a couple of laps. Of course they all wanted a go, so they all had a go at driving and they insisted on wearing Jon or Phil's grease top drivers hat. The grandma of some of the girls joined us along with a 6 year old lad. He too took his turn at driving. Grandma thought this was all great fun, took numerous photos and later posted them on the TME Facebook page.

Driver training and instruction took no time at all, there can be no loco easier to drive than “The Wedge”. All were given the two simple instructions – here is the brake to make it stop, and slide your finger on the touch screen here to make it go. The six year old boy didn't appreciate this, it was all too obvious and said something about it being the same on an Android (whatever that is!).

While this might give the impression that all sense of Laura Norder had broken down, we are very responsible anarchists and safety was not compromised. Pulling two trucks, a Guard was always at the back with one hand on the brake and Jon kept drivers under constant supervision walking around next to them to offer assistance on the first lap and sitting behind them ready to instruct on later laps.

Tests on Carriage Suspension

By “The Thursday gang”

Creech Miniature Railway.
Tests on Carriage Suspension - 25th August 2016

Bogie Twist:
This test consists of lowering rail under one wheel of one bogie, all seven other wheels remaining on level track. The dimension of drop is related to the bogie wheelbase, approximately 9in.

Carriage Twist:
This is to lower the rail under a pair of wheels on one side of a bogie, the other two on that bogie and the four on the remaining bogie still on level track. The dimension of drop is related to the distance between bogie centres, approximately 72in.

RESULTS

The track was lowered to the point where the tread just left the rail head..

Unloaded Tests:

	Bogie Twist	Carriage Twist
Old Carriage	3/8in	5/8in
New Carriage	1/8in	5/8in

Loaded test (approx two people per car)

	Bogie Twist	Carriage Twist
Old Carriage	3/8in	5/8in
New Carriage	1/4in	5/8in

We can see that the newer bogies are somewhat less tolerant of short track defects than the old stock but both have a similar tolerance of longer track twist. Either carriage will accept 1/8in in 9in, a gradient of 1: 72, as a short twist, or 5/8 in 72, a gradient of 1:115 as a long twist.

Clearly the long twist is the more serious track defect for the carriages, and this is the same for both styles. The conclusion is that with the carriage suspension as it is, we must maintain the track with a twist gradient safely within a figure of 1:115.

Steam, Marquees and Very Late Nights...

by Doctor Spin.

Anyone visiting Creech St Michael recreation ground at 5am on Sunday morning 24th July would have been startled by two sights – a prominent member of TME in his underpants entering the portable toilets, while another was driving his electric locomotive and restaurant car train around the track. In both cases the cool morning air produced an invigorating effect. It must have been the stress of the day before.…

Your committee had considered how to celebrate the Club's 70th birthday late last year. A small team was commissioned to undertake the plans. The idea quickly concentrated on two ideas – an exhibition of members' work and the running of trains and traction engines. Of our two sites, Vivary was unsuitable for several reasons, and therefore the choice fell on Creech. Here we could run trains and traction engines and set up a marquee for exhibits.

A day was sought when there were no other steam rallies and the plan was for just one day event to reduce the stress of providing overnight security on site. So it was that 23rd July was chosen. A huge amount of publicity went out – leaflets, Facebook, articles in magazines, and many others; although the hoped-for entries in Model Engineer and BBC Somerset did not in the end materialise.

Work had been going on for some weeks for the Thursday Gang at Creech, clearing the site of many years of growth, and the manufacture of new riding cars. Strimmers, mowers and sheer brute strength were called into play and by the time of the rally the area was like a croquet field. Two days before the event, tables were moved onto the site and the container cleared. One day before, the marquees were erected, and fencing and signs put up.

Andy Webb driving Steve Gosling's Midland compound

The day itself dawned both dry and sunny. It was just as well, as a downpour would have been a disaster. Many members arrived with models – in fact the majority of our 105-odd membership turned up. Most helped with some duties on the day – stewarding, taking fares, fire watching, and of course

Models in the marquee

Dave Woods looks on as Simon Gates tends to his new engine.

running the trains. We had four visiting traction engines as well as several locomotives, all which played their part in making such a memorable day. A huge number of visitors were carried on the trains, by 4pm the pace of the day had taken its toll on many members, several of whom were spotted seated in chairs; but in reality the greatest part of the day was still to come – the Birthday Party itself.

Mike Johns, the Chairman, welcomed the members and congratulated the Club on the 70th birthday; Diana Fathers cut the Birthday cake which was spread among the 100 or so members, and Rose-Marie Whiting named the new Club Hymek locomotive 'NOEL WHITING' in honour of her late husband, a prominent founder member of the Club. After the main event there was an air of relief and after most people had departed the real hardcore of members carried on with a barbecue and some Late Running/Very-Late running/Oh-my-God-it's-Too-Dark-to-See Running/ - as the relief of a day well organised and executed hit home. On Sunday there was some clearing up, and Monday also.

Diana cuts the cake

So that in reality there were five days of intensive effort for one day of birthday celebration. And here is the best thing about the event – inevitably a small hardcore did the most work but most of our members contributed in some way to make the day a success. We can all be pleased at this.

Rose Marie Whiting named the new club loco.

Would we do it again? Looking back, there was nothing we would have done differently. The cost of marquees, toilets and First Aid were significant and if we could avoid these in future all the better. Sadly, in spite of the huge publicity effort we did not get many visitors – perhaps 500 of which most were from the local area and not many model engineers outside our own knowledge. Have we saturated the market? – perhaps. We saw the same when we did the exhibitions at Heathfield School – Saturday afternoon was often quiet. Sunday would have been a second day but the effort of doing so would have been too much. As it was, the Club just about covered its costs.

The hardcore celebrated into the night.

But this is understating what was a superbly enjoyable day – your writer has not

heard one single grumble about the whole event – and many have said that it was the best thing the Club has done for a long time. Should we repeat it - maybe the 75th birthday? Or next year, on a reduced scale? Let your committee know what you think.

It only remains for me to thank everyone who took part or helped in any way for the event. As is often the case, the more you put in, the more you get out from the Club. Some of your colleagues put a huge amount of effort into this event and I hope and believe recouped their investment. To all who helped in any way ....Thanks very much.

The centre of attraction

By Odd Job

To claim that you have invented a new method of centering work on a lathe would be to invite a flood of letters to the editor about the disgusting habits of elderly female relatives involving eggs, but here is a method I find quick and accurate and which I have never seen described before.

When I am marking out a piece which is to be turned or bored on the lathe I use what the Americans describe as a "prick punch" this has a point more like a scriber than a normal centre punch. When the centres have been defined the work is mounted on the faceplate or in the four jaw chuck and roughly centred by eye.

In my tool box I have a length of 1/8" silver steel rod with one end turned to a point with about the same cone angle as my "prick punch". This is put into the tailstock and advanced to engage in the centre hole.

When the work is now turned the point will follow the centre. This allows a more accurate preliminary setting to be made.

I then put an ARO (well if something digital which looks like a new fangled parking meter is a DRO surely these days a clock gauge is an ARO!) on the crossslide so that the stylus touches the side of the rod. If the work is now rotated the eccentricity can be measured and reduced to zero. If the work is running a long way out of true when you first engage the rod you may have to adjust the depth as you reduce the error, taking care not to bow the rod. Making an "elephants foot" for your ARO will make life easier.

The setup note the elephants foot.

Trophy Night 2016

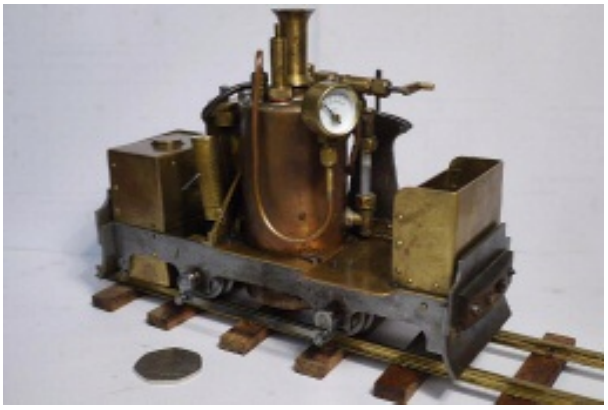
By Dr. Spin

This was as usual an exciting and informative evening. There were 13 entries in all – fewer than previous years but still of a high standard and wide variety, from an exquisitely-finished model in a glass case – to a pile of swarf .....also in a glass case.

The stationary Engine prize went to Alan Hall with his excellent beam engine in its glass case. The model is to a high exhibition standard and in a beautiful oak case and the builder took just seven months. (Did he stop to sleep?).

The Workshop Equipment prize went to Mark Davis with his collection of leatherworking tools. Anyone who studies the TME Roll of Honour will realise that Mark has won this prize on many previous occasions, but this display of hand tools was one of his very best.

Mark Sweet took the Pour Encourager les Autres prize with his 5-plank open wagon in 5in gauge, well finished. The Best Railway Locomotive was presented to Bill Edmondson for his 0-4-0 narrow gauge locomotive “Sanford” with a wealth of interesting detail, including the individually-numbered valve gear parts stamped crookedly (as per the prototype).



Jack’s locomotive.

It is some years since a Junior prize was issued and many decades (if ever) since a steam locomotive featured in this prize. It was therefore a tremendous pleasure for all to see Jack Edmondson scoop the prize for his 32mm gauge, 16mm=1ft scale, vertical boiler locomotive. The model took him two years to complete, and has run at the Yeovil track on several occasions.

All that remained was the one top prize – Model of the Year – and by a close margin the prize went to Mark Sweet, again for his wagon model. To the winners, many congratulations. To the losers – better luck next year!

Electric Locomotives - A Look at Motors and Control Methods

By Jon Freeman

Having been a regular steam loco driver at Vivary Park in recent years, I was finding all the cleaning and maintenance that goes with steam taking too much of my time. This spurred me into thinking about electric locos. I almost bought one of the commercially available kits but there were availability problems with motors at the time, so instead I designed and built one from scratch. Started in October 2014, the loco now known as 'The Wedge' was ready to roll for the 2015 season.

The “Wedge”

An important part of the design process was researching motors and

electronic controllers. All reasonably new locos seen in 5” and 7.25” gauge use permanent magnet d.c. motors (PMDC). These are simple to use with just two electrical terminals. Apply a voltage and the rotor turns. Swap the wires and the rotor turns in the opposite direction. Motors can be wired together in series or parallel, this is useful for designs using multiple motors and a common controller. Commonly seen configurations uses 1 or 2 motors driving each axle.

The two motors in a ”Wedge” bogie.

PMDC motors are easy to use. The general rules are simple enough – motor speed is proportional to motor voltage, and the current drawn by the motor is proportional to the load torque applied to the output shaft. Because the motor contains lengths of copper wire wound on the armature, a commutator and carbon brushes, through all of which the current flows, the motor also has an internal electrical resistance. As the current increases with increasing load, so an increasing voltage drop develops across the motor internal resistance. This voltage is effectively subtracted from the voltage applied, meaning that internally the motor 'sees' a voltage lower than the voltage supplied to the terminals. This explains why the motor slows more the more it is mechanically loaded. When current flows through a resistance electrical energy is converted to heat. This power loss is proportional to the square of the current, and is what limits the mechanical power you can safely extract from the motor without it over-heating or burning-out. At very low speeds and low output powers the above rules need to take frictional losses into account as well. The applied voltage must reach some level before

the motor turns at all. This is because enough current needs to flow to develop torque sufficient to overcome the frictional torque of the bearings, brushes and commutator. This 'lost current' remains more or less constant over the speed range and can be quite significant, often several amps in real motors used for traction.

When searching for motors suitable for electric traction, a place to start is in deciding how much power you need. This can be calculated by imagining the load to pull, what rate of acceleration you need, how it should respond to pulling that load up various gradients, including assumptions about frictional and other losses. An easier method is to see what other locos have under the bonnet and be so guided. My loco, for example, uses four motors each rated at just over 100 Watts (although these are high-efficiency brushless motors, had I used standard PMDC types I would have gone for around 150 Watt each).

Although possible to design the loco with a simple 'On/Off' switch to apply all or none of the available power to the motors this is not a good idea. Applying maximum voltage to a stalled motor for anything more than a second or two risks damage to motors and batteries. At very least a controller must limit current to a safe maximum. On electric locomotives of a century ago, (and still today on the Seaton Tramway vehicles) the driver pulls away from rest by moving a handle or lever over a series of contacts, each switching a current limiting resistor between the motors and the supply.
As the speed increases so it becomes safe to reduce the extra series resistance. While this can work well much power is wasted as heat in the control resistors. Using modern electronics we can achieve the current limit function and motor control efficiently – important for battery powered machines.

But what sort of control do we want or need?

Identified above, a current limit is, really, essential. Apart from that our specification can be quite loose. We don't need to adjust speed to any degree of accuracy. A limit on maximum speed might be desirable but not essential. This non-requirement for precision works well for us here as this suggests use of an open-loop controller (cheap). An open-loop controller will apply some voltage, or current, or power to the motors, the controller neither knows nor cares what the motors do with this. A closed-loop (expensive) controller would include using some feedback signal from the motors used to refine the control – not needed here. We could design a controller which regulates either the voltage applied to (speed control), the maximum current drawn by (torque control), or the power supplied to (power control), the motors. Any of these would be suitable for driving trains around the park, but the driver-experience will be different.

As far as I recall, all other model scale electric locos I've looked at use voltage / speed controllers. With a voltage / speed control, you turn the knob to some setting and the train trundles along at about the set speed. This is fine, but you get no feedback. The driver is given no sense of the load, of any gradient, or of how hard the loco is working. This is far from the experience of driving a steam loco, or a car, motorbike, Seaton tram, or just about any other vehicle for that matter. The steam loco regulator is not a speed control, it more closely approximates to a power control in that for a particular setting it can deliver a larger flow to a low pressure or a lesser flow at higher pressure. Ignoring the steam gear lever, you would not expect to drive a steam loco around any real circuit by opening the regulator to some setting and leaving it there. There is some skill in not opening the regulator too far or too fast when pulling away to avoid wheel-slip. It helps to 'know the road' making sure you have enough steam and adjusting controls accordingly before beginning a climb, and knowing how best to set for 'drifting' down a gradient or on approach to the station. The accelerator control of a car or bike is

more similar to a torque control. The vehicle achieves increasing speed through the sustained application of torque sufficient to overcome opposing forces. The accelerator is not a speed control.

Driving at the regulation 30MPH down the gentle slope to the shops requires light accelerator pressure, greater pressure required on the return journey. Listening to the engines when travelling by DMU on the rail network can tell you a lot about your journey – climbing or falling gradient, drifting towards a stop etc. This explains why I designed The Wedge loco to use a current / torque control. I wanted the feel to be in some way 'real', and it does have a feel similar to the familiar accelerator. The control uses a touch-screen but this is in reality no different to a rotary knob or linear lever. To pull away from the station at Vivary Park I go straight for a fairly high torque setting. If I don't get the acceleration I expect, I can look behind me to confirm I have some heavy-weight passengers, I might then go for maximum torque. By the time I've rounded the sharpest curve, the one just after the first lift-out section, I am probably running at about 5MPH and I reduce the torque demand. Torque of somewhere around quarter to a third of maximum is all that's then needed to accelerate gently along the outward straight towards the tennis courts. Keeping gentle torque applied around the curve I go for zero torque (drifting) on the return straight. If stopping at the station, no further torque application is needed, but when going around for another lap, something around the half torque setting gets the train through the station and around the curves ready to relax a little again

The “Wedge” touch screen panel

on the outward straight. The driver is in control, not the electronic controller. The driver can decide how much current is drawn from the battery, there are digital voltmeters and ammeters on screen. Voltage / speed controllers treat batteries more harshly. This might explain how “The Wedge” keeps going long after similarly powered locos doing the same job on the same day, retire exhausted.

In conclusion, “The Wedge” is easy to drive but the driver does need to react to track and load conditions, as with any real-world loco or vehicle. This keeps the job of driving interesting. Driving locos with voltage controllers takes all the fun and interest out of it for me. I'm currently working on a 7.25” electric design, again using brushless motors and torque control.

More technical info can be found on my web site www.jons-workshop.com

ClubLEC 2016

Report by Dr Spin

This year, the competition was held on a Tuesday evening in June. There were four competitors but there was a noted absence of Phil Mortimer as an entry – he had retired after winning the competition four times in a row….

First off was Dave Wood with his Polly 4. He started confidently, but came to a stand after the first lap for a blow up. After restarting, he covered good ground, but his long stand meant he completed only 7¼ laps before time was called. He was hauling 5 passengers and himself.

Second was Mark Sweet with the GWR pannier ,LBSC's "Pansy". Mark just crawled over the first removable section and beside the stream, but just kept going and made eight good laps before unfortunately the fire went out. He was hauling 4 passengers.

Mark's pannier at speed.

Third on was Ian Grinter with his Royal Scot. Ian took 8 passengers, himself and the dog, and made a confident start – in fact so confident that the timekeeper missed the first lap time - and kept going steadily at 70 seconds per lap and finished 15¾ laps. He did however burn a lot of coal.

Raising steam on Dave's "Polly"

Fourth was a newcomer to the Competition – Simon Gates, he was driving Dave Wood's Polly 4 from earlier in the evening, (having had the fire dropped and cooled down). Simon gave an exemplary run. The first lap was completed in a frighteningly fast 1min 43s and he continued, steadily, lap after lap at between 62 and 70 seconds and finished after 17½ laps. Simon exhibited casual confidence all the time and the results speak for themselves. His

face at the end of the run showed two things – delight at winning the competition and strong indications that his lubricator had been working generously on the run.

The Results.

DRIVER	LOCO	LOAD	DISTANCE COVERED	COAL BURNT	SCORE
D. Wood	Polly 4	1426 lb	4894 ft	1.06 lb	6.58
M. Sweet	GWR Pannier	1396 lb	5736 ft	1.25 lb	6.41
I Grinter	Royal Scot	1975 lb	10631 ft	2.52 lb	8.33
S. Gates	Polly 4	1353 lb	11812 ft	1.69 lb	9.45

Mike Johns presented the Shield to the worthy winner, Simon Gates, at the end of another exciting competition. Once again, the event was popular with the Club, with over 25% of the membership present and Barney Evans once again kept everyone's spirits up with a good supply of tea from the kitchen.

Our chairman presents Simon with the shield.

" ON THE FOOTPLATE"

The Art of Starting

By Ray Rolt

The first requirement is to open the regulator. On the face of it, this would seem to be easy, but in reality it is not. On most of the older locomotives the regulator valve is in the dome, this being where the steam is driest, and consists of a plate that uncovers a port which connects to a pipe which extends to the front tube plate and thence to the cylinders. Lubrication of this is very difficult. As a result, opening the regulator requires both hands and considerable force. Once it starts opening, due to the effort needed, the port opens suddenly giving a large opening which could induce slipping. So you have to quickly close the regulator again! Here the trick is to limit this so that the port remains partly open. If this is judged correctly, the loco will start smoothly and using the palm of the hand or side of the fist, the regulator can be tapped open the required amount. When the loco is running at speed, the regulator can be fully opened if needed.

The reason for this is that the valve is under full boiler pressure causing high friction. Once the port becomes uncovered this reduces. On more modern locos, there is a pilot valve to give a more controlled initial admission of steam and on the larger mixed traffic and passenger locos a double beat 'poppet' valve is used to eliminate pressure on the valve.

Where super heaters are fitted a multiple valve can be fitted on the superheater header in the smoke box.

The above is carried out assuming that the reverser is in 'full gear',

giving a “cut-off” of about 75% to the cylinder valves. This gives full steam pressure on the pistons for most of the stroke for good starting and initial acceleration. As the speed increases the “cut off” is steadily advanced to enhance the acceleration and final speed and give improved steam efficiency.

Ray on the footplate of a 3F.

The reverser can be of two types, lever or screw operated. In locos used for passenger hauling the screw type is normally used but where they are mainly used on goods trains the lever type is used. This facilitates quick reversing when setting back into sidings or shunting. With the notable exception of one or two small ’Ivatt’ 2-6-2T’s, all the locos on the branch were the Johnson 0-4-4T, which had a screw reverser, or 3F 0-6-0 tender locos, which had a lever reverser.

After a few years the 0-4-4T’s were withdrawn and the “Ivatts”, which were lovely locos with “left hand drive”, also disappeared. At about this time, one or two 4F 0-6-0’s arrived, which were used on the goods trains. This meant that the 3F was used on the passenger trains. As the normal train formation was a B.R. two coach Type ‘B’ non corridor set with two Southern four wheeled “Utility” Vans, mainly for the Clark’s shoe traffic from Glastonbury, this seemed excessive as the 0-4-4T was quite adequate. On Saturdays, one of the trains was strengthened to about five corridor coaches which justified a 3F. It may come as a surprise in view of the dead level route across the peat moors that this was the limit for the 3F, a “pilot” being required for six or more coaches!

This was because the start out of Glastonbury towards Evercreech was on a steeply graded curve which required a continuous “check rail” on the inside rail, with added friction on the wheel flanges, and a long final climb at Pylle into Evercreech.

This leads into starting a train with a ‘pilot’! This opportunity only occurred once when I was on the ‘pilot’, an 0-4-4T, starting on the bank out of Glastonbury. The crew on the 3F took the signal from the guard and whistled. We responded with a whistle, which confirmed that we were ready, and an attempt at synchronised starting began. I half opened the regulator and the 3F did the same. Being on the curve meant that only the driving wheels on one side, probably on the ‘check railed’ side, could get traction . We started ‘slipping’ and I had to close the regulator and before I could partially open it again the 3F “slipped” as well. We managed to synchronise the reopening of the regulators and made a steady climb to the top of the bank!

Whilst advancing the “cut off “ with a screw reverser is straight forward, as the leadscrew does the work, with a lever reverse on an engine with slide valves it is totally different. The steam pressure on the back of the valves means that the regulator has to be shut and reopened again after the reverser has been adjusted. There is a foot rest on the front of the sector plate, which is notched for different “cut offs” and with your left foot on this and using both hands, the adjustment is made.

Because we were starting on level track, it was standard practice once on the move, to pull up the reverser to minimum ‘cut off’, about 33%. This resulted in what amounted to a sound like a ‘mechanical boxing match’ from between the frames until speed reached about 30 mph when it all went silent! I was not happy at doing this but followed instructions. Whether this was standard ‘Midland’ practice or just a local practice I don’t know.

When shutting off steam in preparation for stopping, it was standard practice to ‘crack open’ the blower before shutting the regulator and with slide valve locos the reverser was put into full gear. With piston valve locos the reverser was left alone and only put into full gear if needing to pull forward after a signal check or for restarting.

When starting to climb a gradient, with a lever reverser the regulator was eased a bit and repeating the same procedure as for advancing the “cut off” the latch was immediately released so that the latch engaged into the next notch towards full gear. The regulator was then opened the required amount to tackle the gradient ahead.

When starting a goods train, due to the loose couplings, the regulator was only partially opened and when speed was at walking pace it was closed again. This was to reduce the ‘snatch’ as the slack in the couplings was taken up along the train which could give the guard a nasty jolt. On receiving his hand “signal” the regulator could then be opened again and the speed increased to the desired degree.

OF SHIPS AND THINGS

BY FIREMAN M.N. RETIRED

So much for, we have three other chaps to see and we will let you know the outcome, I wanted a job now, so on my way home I bought the local newspaper and in the jobs section was, boiler man wanted and a phone number. I rang through and was put through to the chief engineer. When I said ex merchant navy and I stressed the ex he picked up on that straight away. Can you come in tomorrow he said so I countered with, why not now?

We finish at four but I will hang on for you and then told me we are a dry cleaning works, just down the North Circular Road from Hanger Lane you can't miss it you will see our chimney, he was right there it was about 150 feet high.

The boiler was a standard "Lancashire" seven foot six in diameter and thirty foot long, coal fired. The chief said that the steam demand was fairly constant at about 100 psi. looking at it, all seemed fairly straight forward, so with tongue in cheek I said I would take the job, to start next day.

Next morning at six am ready to go I was on my own in the deep end so to speak. The fires had been banked up the night before with small coal and dust and the dampers shut, so the first job was to open up and get some air in and as the fires started to glow drag out the lumps of clinker and then the ash from below the fire bars and strangely a lot of big stones. Gradually spread the fires out and put on fresh coal. Then when the pressure started to rise from the 50 psi it had dropped to overnight was the time to put more water in.

There was an injector which wouldn't work no matter how hard I hit it with the shovel, also a "Weir" feed pump, I was happy with, as it was the same type as used on most ships for feeding the donkey boilers. They were a simple vertical job, steam cylinder at the top and water pump at the bottom, they were nicknamed "moaning Minnie" owing to the strange sighing sound they made when working but at least you could hear them working.

At seven thirty I had to crack the main stop valve to allow steam to circulate round the works to start warming through ready to start up at eight o'clock. Five to eight with two good fires going and plenty of water and the pressure up to 100 lb, I was ready, so I fully opened the main stop valve and went up top for a smoke, then I heard the phone ringing in the stoke hold.

I slid down the ladder and grabbed it of the wall, an angry chief was shouting, there's no steam, I thought he was winding me up but on looking at the gauge it had dropped to 50 lb my answer was don't panic I will fix it.

First things first, shut down the feed pump then shovel on more coal and the cardinal sin slightly open the fire doors to let more air in but this also causes more smoke at the top of the stack. By shutting the main stop I could have had a pressure back up in no time, but with about 100 women in the works on bonus all using equipment needing steam there probably have been a riot. By 9.30 I had the problem sorted and things settled down. Time to finish that smoke. At 12.30 things were going well when to my horror the pressure started to rise. With oil firing close the oil supply valve and the pressure drops, not so with coal, once it's going it keeps going despite shutting down the air supply, which only makes more smoke. I must admit I was a bit concerned when the pressure got to 140 psi and then at 150 the safety valve lifted with an almighty screech and filled the boiler house with steam.

The next thing was to open up the blow-down valve to get rid of a lot of water and restart the feed pump to cool things down a bit, things were soon settled even if the pressure was still a bit high.

Unbeknown to me the works shut down at 12.30 for lunch, I won't be caught out on that one again. Four o'clock the phone rang, you can shut the main stop we are finished for the day, nice to be told sometimes.

All that remained was to fill up with water, clear the ashes and bank down the fires ready to shut down for the night and wash my hands and face

Altogether an interesting day but at least I got away with it.

Letters to the editor.

Dear John.

I have returned home safely with my engine after the Creech TME 70th Anniversary Gala and may I say what a splendid occasion it was. I would just like to thank everyone involved with the organisation and, in particular, David Hartland who did such a wonderful job of pulling it all together. I know how much effort it all takes and was sorry that, being a country member based in Leicester (!), I could not assist but it all ran faultlessly and I had a great time.

Well done to all concerned!

Kind regards,
Steve Gosling

More pictures from the Gala

Another view of the marquee

Locos line up before the naming of the new club loco

Late night revelry after the Gala ended