

and Dordogne, and then attend the rally with overnight camp, before returning to the Gite for Sunday night and re-packing the car, for the return trip to Caen – overnight to Portsmouth.

So it was; the ferry was straightforward and the French autoroutes empty ! We made good time, and with stops for breakfast, lunch and fuel arrived at Geerlig's by 4pm. The engine was duly deposited in his workshop and we left for our gite and a few days exploring the region.

Saturday morning we arrived at Geerlig's line, retrieved the Koppel and borrowed a driving truck and by 10am it was in full sway. There were six Koppels, Andy with his Polly 5 and Nick with his (both had split the journey down) and a host of French owned Polly's. They had various continental adornments, a

handful of beautiful continental locos and a couple of electrics, not to mention the rakes of wagons ! I admired the superb finish on many of the locos, and the variety of personalisation that adorned their locos. But, so they tell me, looks aren't everything!



The steaming bays and engine shed.

Photo Richard Smith



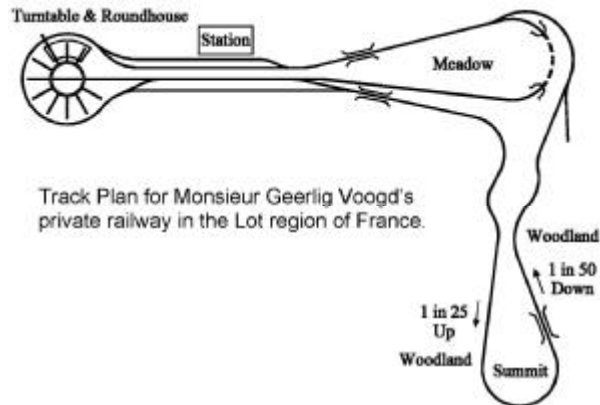
A Koppel pulling a log train.

Photo Richard Smith

interesting local dialogue which is supplemented by much pointing, scratching

In addition to the loco owners and their families there was a mixed contingent of railway enthusiasts (expats and local) and friends from the immediate surroundings. The atmosphere was wonderfully relaxed, enthusiasm and interest from all and much interest in conversing in "frenghish" - an

of heads and asking colleagues for potential words, but we all seemed to rather enjoy the exchange !



The steaming bays radiate out from a turntable accompanied by a scale roundhouse. Once happy you pull out on to the main line and enter "Le Gare", a 4 road station (with accompanying scale building), the line from the sheds forming the inner "down" line. After a quick and customary cup of "entente cordiale" from the "refreshment wagon", a beautiful spirit barrel on wagon chassis - the challenge begins. Making sure you have a strong fire, full boiler and are just about to blow off, you trail the station loop points and take the mountain route (the lower line through the tunnel only saw occasional freight services during the weekend). Crossing a trestle bridge the line begins to climb steeply. You can only open the regulator part way as you are then immediately into a sharp right hand bend (still climbing) then plunge through a reverse curve into the wood, whilst reaching the steepest part of the line at 1 in 25. The summit



The "refreshment wagon".

Photo Richard Smith

curve is populated by spectators drawn to the snorting exhausts and if successful you are greeted with a cheer and smiles. No sooner have you crested the summit than the descent begins, a relatively constant 1 in 50, so it is blower on, bypass closed and hand on the brakes. Across another girder bridge the line gently curves back towards the ascending line where you can watch the next train braving the grade before you snake away through the wood. You pass through trailing points where the lumber wagons reside before regaining the meadow. Still descending a sharp left hand bend, 3 feet off the ground, bringing the tunnel line back to join the main running line, the line then proceeds to climb again on an embankment and further trestle bridge towards the station. The station loop point passed it is fairly level you then exit the loop and curve round the back of the steaming bays to re-join the station in the outer loop.

Fortified with another measure of “juice de rasion et au d’vie”, you can replenish the water and sort out the fire – with a big grin on your face. And so the day progressed, lunch came and went (at a leisurely pace). The afternoon provided numerous opportunities for passengers to ride the gradients, both local children and enthusiasts alike.

To be continued.

Workshop Tips

Useful workshop ideas from toolmaker Peter Downes.

Setting up a milling machine for the beginner.

A component is a series of important holes, flats, and slots held apart by metal. When you are machining a component you are not interested what it is for, all you are interested in is the positions of the holes, flats, and slots from the datum edge. This information is on the drawing or can be worked out. You now have to set the machine in such a way that the component is held against two datum edges, either in a vice or directly on the table.

If you are going to use a vice the first thing you have to do is set the vice square to the table using a finger clock. Nip the vice down with one bolt and hold the finger clock in the chuck or cutter holder on the head. Touch the clock onto one end of the fixed jaw of the vice and the feed the cross slide over until you have about 10-15 thou on the clock. Wind the table across until you are at the other end of the vice jaw. Now tap the vice until the same number is on the clock and then wind the table back and check the clock. Keep doing this until the clock reads “0” all the way along and then tighten up both bolts. The vice is now set square to the table and is the first datum. If you held a block in the vice and ran a cut across its end it would be square to the face that

is against the fixed jaw of the vice. Once this is done the mill is set up for basic milling of flat surfaces.

You can machine the top of a block or the end square to the fixed jaw of the vice. The one thing you can't do in a vice is make a perfectly square cube by just turning the block over and over. As you tighten the vice the moving jaw will lift the block. The amount it lifts is not enough to worry general machining but if you have to get things exactly right there is a way of getting around it.



Photo Colin Gross

Aligning the machine vice.

When you tighten the vice only nip it up, you should be able to undo the vice with a light tap of the hand.

Having machined your block to size the next problem is setting the machine to drill a hole in the right place. To do this you need to know the position of the centre point of the cutter or drill. Start by putting the block in the vice and slide it up to a fixed stop. I always use a magnetic base with an adjustable rod in it. You need to find one corner of the block to be your datum from which all dimensions will come from. To do this you need to find the edge of two faces at right angles to each other; one will be the fixed face of the vice and the other one end face of the block. There are a lot of edge finders on the market if you haven't got one you can use the old way of doing it. First put a strip of masking tape on the front of the moving table as close to the joint where the two parts slide past each other as possible. Then one on the bottom fixed part as close to the joint as possible. Repeat this process on the cross slide this will give you something to mark positions on. Set the speed of the head to about 250R.P.M. and fit a drill chuck into the head. Put a dowel of a known size into the chuck say 1/4ins. Position the dowel so that it is just off of the fixed face of the chuck and about 1/2ins of the dowel nearly in contact with the face of the vice. You now need a fag paper or shim of a known size most people use a fag paper because they are about 0.002” thick. Start up the machine and lightly holding the fag paper between two fingers, position it between the dowel and vice jaw. Gently move the table until the revolving dowel compresses the paper against the vice jaw and pulls the paper out of your fingers. Now set the dial on the handle to “0” wind the table back and do it again. If the dial reads “0” lift the chuck out of the way and move the table the

same way half the diameter of the dowel plus the thickness of the paper. In this case it would be 0.125" (half of the dowel) plus 0.002" for the paper, totalling 0.127". Reset the dial to "0". The centre of the drill or cutter is now at the same position as the face of the fixed jaw of the vice. So that you can come back to this position draw a vertical line across the two pieces of masking tape and write "0" beside the line on both pieces of tape. On the moving part of the table mark an arrow showing the direction the table was moved to set the machine. If you now move the table away and come back in from the same direction to a position close to the line. Then move the handle until dial read "0" you will be back in the same position. If you now do the same thing in the other direction you will have found and set your corner datum. You must never move the dials until you have finished with the set up.

To drill a hole in a precise position first work out its position from the datum corner of the block. If you have a position of 0.762" one way by 0.437" the other way and one turn of the handle is 0.250". Start by turning the handle three turns until you come to "0" and then move on 0.012". Look at the moving line on the table and extend the line onto the bottom tape and write 0.762 beside it. Repeat this on the other dimension. You can now go on to set up other hole positions and mark them on the tape. When you have finished all the holes you can take the block out and put another block of the same size in the vice, go back to the "0" position; and then using your lines put another set of holes in the correct positions to make an identical item.

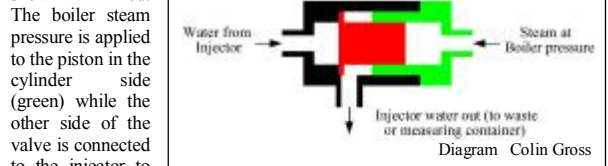
TESTING INJECTORS

Derek Tulley describes his Injector Test Rig

Probably the most common complaint that is heard on any running day is that an injector isn't working. In my experience it is rarely obvious why. Is it the injector that is at fault? The injector is a simple device with no moving parts relying on some cunning science to achieve the trick of adding water to a pressurised vessel using only the pressurised vapour from within that vessel. This requires the device to be manufactured to very close tolerances, to be kept clear of blockages, to be undamaged, and also to be fitted to correctly sized pipes. Most injectors as manufactured would be assumed to meet the first criteria. The rest is up to us. However it would be very nice to be able to test any injector, new or old, to check that it does function as required in terms of operating pressure range and quantity of water delivered per unit time.

Just recently a new book has been published 'Miniature Injectors Inside and Out' by D A G Brown. It is a very good read explaining how injectors work, giving detailed drawings of a range of injectors and a blow by blow account of how to manufacture them. Possibly more important to us, he also details a

device to check the function of these injectors after manufacture and of course equally capable of testing any other injector you may have. This is basically a large valve held closed by boiler pressure. In the diagram the piston / valve is shown in red.



to be tested. If the injector is functioning correctly the valve will be forced back off its seat (black) and the feed water will flow out of a drain hole in the bottom of the valve for collection and measurement.

As I had several injectors that were suspect, or that I wished to eliminate as the cause of non performance of the system, I decided to make one of these devices. They are quite simple and easily completed in a day, only requiring a couple of inches of 1½" diameter brass bar and an O ring for the piston seal. It does however require a source of steam with which to function. The book again gives details of a suitable test boiler using a gas burner, but a few calculations soon revealed that this was not going to be either quick or cheap to manufacture. When discussing this with Keith Briault he came up with the suggestion of using an existing small loco, such as my Simplex, as a steam source. This quickly gave rise to the set up shown in the accompanying photograph. As I did not have any spare steam outlets on the Simplex and wished to still be able to use it as a loco I decided to insert a new manifold carrying two steam valves below one of the safety valves. One valve provides steam at boiler pressure to the boiler side of the tester; the other valve is connected via a length of pipe to the injector which is itself connected to the other side of the tester. Whilst it looks as if the system could be made neater by



Photo Alistair Harvey

The Injector Tester in use.

shortening the pipes, when I did this initially the result was that the injector rapidly overheated due to conduction of heat from the boiler along the short length of pipe. Feed water is piped to the injector via a flexible pipe from a plastic bottle. This also enables the injector to be tested for its capacity to lift if that is required. The photo was taken on the first outing of this device and I think all present were amazed at the way the injector under test started immediately on opening the steam valve and the stream of water pouring from beneath it. Proof positive of its functionality! I had another injector that would not work at full boiler pressure when fitted to one of my locos and I suspected that it must be a fault of a valve or the pipework. However, testing proved that the problem was a characteristic of the injector. In the diagnostic section of the book it was suggested that this problem could be cured by withdrawing the steam cone by 5 to 10 thousandths of an inch. I therefore turned up a couple of 5 Thou' thick washers and inserted them between the cone's flange and the injector body. On retest the injector worked very happily at 100 psi.

This has proved to be a very satisfying exercise as it is now possible to confirm whether it is the injector causing the problem or other parts of the system, which I believe is more often than not the case. Conducting a test is no more difficult than the normal firing up of the loco. Ideally you need two people to carry out the test, one to look after the loco and the other to operate the injector as otherwise you rapidly run out of hands, steam, water or fire.

Should anybody have any injectors that they would like tested I would be happy to bring the rig down to the club at a time of mutual convenience.



Photo Colin Gross
John Ephthite & his Titch.



Photo Colin Gross
Gentoo gets ready for the Santa Specials.

NEW LOCOS AND ROLLING STOCK

(Some of the stock recently built or acquired by members)

Mike Cole has recently started running his Class 35 Hymek battery electric locomotive at Pinewood. The loco was originally bought new from Dan Jeavons by David Elen about 10 years ago. David can't remember the actual year but the model could be the prototype, or at least an early production model, as the chassis has extra holes where components have been repositioned. The model has four motors, one driving each axle, rated at 120



Photo Colin Gross
Mike Cole's Class 35 Hymek and driving carriage in the Pinewood Yard.

amps. It is fitted with a 4QD Pro-120 control system and had two car horns which were very loud and stuffed with tissues to mute the volume. David had to disassemble the loco to transport it (body, chassis, two bogies and the batteries) and due to the effort involved had stopped using it. I asked David for first refusal if he was selling the engine and he finally agreed. As there was no sound system I have installed a Magpie digital sound system and removed the car horns. Magpie only sell through agents so I bought it through Compass House, who have also developed a dedicated hand controller which I also purchased.

The driving truck is new from A.M.E (Abbots Model Engineering). The truck is based on an LMS 50ft luggage van which BR continued to build. Peter Abbot is still able to be flexible as to detail etc. as he builds to order, so I had a different seat pattern made so that I could fit the hand controller at the front of the truck. I had brakes fitted to one bogie, but devised my own operating system for them. I have also fitted my own running boards which I think are better looking than the ones supplied by A.M.E. Modifications to come include some under chassis detail.

VISIBILITY REQUIREMENTS FOR TRAINS

Shunting Locomotives

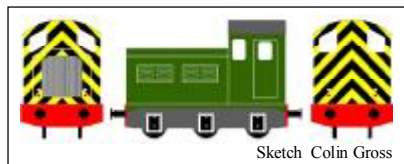
For those of you painting model shunting locomotives (or independently powered snowploughs !) the following extract from the Railway Group Standard GM/RT2483 Visibility Requirements for Trains may be of interest. If you know the scale of your model, and the designed maximum speed of the original vehicle, you can work out the width and layout of the chevron stripes that should be applied to your model. (All quotations are in italics.)

These vehicles shall have, so far as is practicable, all forward facing surfaces painted yellow colour with black diagonal stripes. The stripes shall be applied at a nominal angle of 45° from the vertical. The width of each stripe, measured at 90° to the edge of the stripe, shall be in accordance with the table below. The distance between adjacent stripes shall be the same as the width of the stripe.

<i>Vehicle maximum design speed</i>	<i>Minimum width of stripe</i>
<i>mph</i>	<i>Width in millimetres</i>
<i>20</i>	<i>80</i>
<i>30</i>	<i>120</i>
<i>40</i>	<i>160</i>
<i>60</i>	<i>240</i>

Maximum width of diagonal stripes shall be twice the appropriate minimum width given in this table.

The requirements also state that *if the vehicle has curved ends the markings shall be applied in such a fashion that they are perceived as uniform stripes when viewed, at a large distance, head on from in front of the vehicle.* In practice this means that the width of the stripes may need to vary as they follow the contours of a curved surface; so you may find that the edges of your stripes are neither straight nor parallel on the surface you are painting !



The sketch (left) shows how the markings should be applied to a typical shunter. The important point to note being that if the loco has a long and relatively narrow

bonnet the stripes should appear on both the end of the bonnet and on the associated cab front face.

WORK IN PROGRESS

An update on progress with Fair Rosamund (Derek Tulley)

As most of you will be aware Neville Evans who was designing Fair Rosamund, a precursor to the ubiquitous 14xx, died last April. At the time of his final illness in November I had just caught up with his completed drawings and was awaiting the final drawings of cab and bunker before painting the boiler, tanks and other platerwork once the warmer weather returned. Pete Thomas of Polly Engineering has now got access to Neville's designs and is completing the remaining drawings.

With the prospect of this I have dusted off Fair Rosamund and painted all the completed parts, made the dome, completed all the piping, made the handrails, and made and fitted the grate and ashpan. It is surprising how long it has taken to do all these final fiddly bits but hopefully you will agree that a rather nice looking little locomotive is emerging. Hopefully we will see it completed by the start of the next running season.



Photo Derek Tulley
Fair Rosamund, less cab and bunker.

HOW (NOT) TO TEST CLACK VALVES

The Editor writes about what should probably have been obvious

Recently I made a pair of Clack Valves. The photo shows my design, which had the added bonus of allowing me to machine the ball seat without resorting to the complications of deep boring or "D" bits. The various bores were all to well published design parameters, and the balls had been seated using a jig and brass punch (refaced after each use). With the pair of clacks completed I then decided to test them by connecting the boiler port to my compressors airline,

and with 120 psi applied submerging the clack in water. To my annoyance air bubbled relentlessly out of the input port.



Photo Colin Gross
The Injector Clack Valves.

Over the next week I tested the clacks, both dry and "wet" (by letting water into the inverted submerged valve) and with ever increasing manufacturing accuracies, in turn trying reaming, then boring, and finally polishing of the ball seats. However after making and testing 12 ball seat sections I still had not stemmed the continuous bubbling

After a week I changed the method of testing. The air line was run from the compressor to the garage roof, down to the floor, and up to the workbench.

Then I filled the lower loop of the air line with water and attached the clack valve. With the clack lowered to the floor I applied 120 psi and watched the clack input port. After 10 minutes a single drip of water fell out, followed about 10 minutes later by another. Even my least accurate unit only dripped about once every 2 minutes. **Lesson learnt** - even a wetted clack valve can't hold back dry air pressure, but with pressurised water on the boiler side the true performance of the valve can be tested.

PUBLIC RUNNING DUTY ROSTER 2012

Date	Officer in Charge	Assistant
April 8 th Easter Sunday	Keith Briault	John Brotherton
April 15 th	Keith Briault	John Bradshaw
May 20 th	Nigel Jaques	Timothy Caswell
June 17 th	Derek Tully	David Pritchard
July 15 th	Brian Barrow	Tim Taylor
August 19 th	Ray Grace	David Curtis
September 16 th	James Jarvis	Alan Davies
October 21 st	Keith Briault	Andy Cross
December 2 nd and 9 th	Keith Briault	

Please note: If you are unable to attend on the date shown in the roster, or would like to volunteer for a role, please let Keith Briault know as early as possible.

DIARY DATES 2012

External events are in *italic* text. Please check dates before travelling.

DATE	EVENT	
January 2012	<i>Friday 20th to Sunday 22nd</i>	<i>London Model Engineering Exhibition at Alexandra Palace</i>
March 2012	TBA	AGM
April 2012	Sunday 1 st	Members' Running, 10:00 - 16:00
	Sunday 8 th	Easter Public Running, 13:30 - 16:00
	Sunday 15 th	Birthday Party, 11:00 - 13:00 Public Running, 13:30 - 16:00
May 2012	Sunday 6 th	Members' Running, 10:00 - 16:00
	Sunday 20 th	Birthday Party, 11:00 - 13:00 Public Running, 13:30 - 16:00
June 2012	Sunday 3 rd	Family Day, 10:00 - 16:00
	Sunday 17 th	Birthday Party, 11:00 - 13:00 Public Running, 13:30 - 16:00
July 2012	Sunday 1 st	Members' Running, 10:00 - 16:00
	<i>Sunday 8th</i>	<i>Invite to Chesterfield (Hady) M.E.S. Diesal / Electric Day.</i>
	<i>Saturday 7th & Sunday 8th</i>	<i>Guildford Model Engineering Society. Model Steam Rally and Exhibition.</i>
	Sunday 15 th	Birthday Party, 11:00 - 13:00 Public Running, 13:30 - 16:00
August 2012	Sunday 5 th	Members' Running, 10:00 - 16:00
	Sunday 19 th	Birthday Party, 11:00 - 13:00 Public Running, 13:30 - 16:00
September 2012	Sunday 2 nd	Members' Running, 10:00 - 16:00
	Sunday 16 th	Birthday Party, 11:00 - 13:00 Public Running, 13:30 - 16:00
October 2012	Sunday 7 th	Members' Running, 10:00 - 16:00
	Sunday 21 st	Birthday Party, 11:00 - 13:00 Public Running, 13:30 - 16:00
December 2012	Sunday 2 nd & Sunday 9 th	Santa Specials Please come along to help 08:30 - 17:00