LINK

NEWSLETTER OF THE
COLCHESTER SOCIETY OF MODEL & EXPERIMENTAL ENGINEERS LTD

No 45 **November 2013**

Photo by Jon Mottershaw

Published every four months by
COLCHESTER SOCIETY OF MODEL & EXPERIMENTAL ENGINEERS LTD

Printed by Sharward Services Ltd Westerfield Ipswich

Cover Picture

This shot of Tornado on its final approach to Colchester station was captured by Jon Mottershaw

Editorial

By the time this edition of LINK finds its way through readers letter boxes the annual round of exhibitions will be well under way. The Midland Exhibition will have come and gone, Sandown Park will be just around the corner and the New Year will bring "Ally Pally" and for those inclined to travel, Harrogate will be in prospect. Each year many of us make a pilgrimage to one or more of these exhibitions, either on our own, with friends or as part of a Club outing. Thinking about this recently I asked myself why do we do this year after year? There are, no doubt, many answers to this question, each individual having his or her own motivation. Some people simply like to see what others are up to and keep up to date with developments within the hobby. Others will be attracted by the various trade stands at the shows and will seek the opportunity to obtain their latest requirements for material, castings and fastenings. These people will attend with long shopping lists (and these days, thick wallets). Yet others will treat an exhibition as an opportunity to rendezvous with friends and acquaintances from faraway places who they only see on such occasions. From a personal point of view, although all of these reasons contribute to my enthusiasm for attending exhibitions the primary attraction is the models on display.

To me an exhibition provides an opportunity to view the work of model engineers outside my usual circle of acquaintances, to study their creations and draw inspiration from their craftsmanship. The standard of workmanship on display invariably spans a wide range of ability. A detailed study of individual models will, in some cases, lead to criticism of detail or finish and a feeling that "I could have done better than that". This may give a brief boost to personal ego but it is well to remember that the anonymous individual who is the subject of such criticism has no doubt done his or her best and to find fault is ingenuous. We all have to start somewhere. Whilst there are inevitably a few exhibits that fall into the category just described, there are many more which cause me to marvel at their creator's skills. It is the models which cause me to think "how did he do that?" or "I could never do that" which really count. It is the realisation that what one is looking at is so much better crafted than one's own efforts that serve as an inspiration to return to the workshop and strive to achieve similar standards of craftsmanship.

The quality of workmanship in some of the exhibits is, in my humble opinion, quite breath taking and warrants very detailed study. This, I find, is particularly true of exhibits at the Model Engineer Exhibition held at Sandown Park. This is probably because this is not only the original such exhibition but because the competition element of the show has a long and respected history and attracts some of the finest models. All of the exhibitions offer similar challenges and inspiration, however and some superb models are to be found at all of them.

It is only possible for us to enjoy the models on display at any exhibition and to meet with members of other clubs and organisations because their builders are prepared to take the trouble to enter them in the show and the organisations we interact with take the trouble to attend. Is it not a little selfish, therefore, to enjoy other peoples efforts but never contribute anything ourselves? Many fine models have been built by members of our Society but very few of them ever find their way to exhibitions. There are many which do not even appear at our own mini exhibitions held at local public events.

One of the objectives of these mini exhibitions is to advertise our Societies existence and hopefully recruit new members. May I suggest that a Club stand at one of the national exhibitions would be a very effective way of raising the Societies profile and recruiting new blood whilst at the same time sharing the achievements of our members with the wider model engineering community? I am aware that this would involve a good deal of work by members to organise a display and build a stand and would incur some expense for those involved. If we are seriously concerned about the future of the Society a proactive approach is required to reverse the current stagnation or decline in membership numbers. Sitting back and hoping that there are people out there who will find us and come knocking on our door is not the way to preserve the future of the organisation.

I am pleased to be able to include two letters in this edition of LINK but am concerned that technical contributions for the magazine are in rather short supply and this edition is shorter than usual. With one hundred and thirty members there must be a significant number who are busily creating projects and solving problems which would be of interest to us all, yet very few seem willing to share their work with us by writing an article for LINK. In the last eight editions only seven members have contributed technical articles and two of those write a regular contribution in every edition. This is YOUR magazine so why not share your achievements, problems and experience with the rest of us or use the "Letters" column to express your opinions on Club matters. Do not worry if you lack confidence in your literary abilities. It is the editors job to knock things into shape! You may find that your work is of interest to a wider audience than readers of LINK. Of the technical articles published in the last eight editions two have already been taken up by main stream magazines and at the time of writing two more are in the pipeline for publication.

Finally, as this is the last edition of LINK before Christmas, may I take the opportunity to wish all of our readers an enjoyable festive season and a prosperous and successful 2014.

Editor

From the Chair

This summer turned out to be much better than last year. The Club hosted several events this year. Six members of the Basingstoke Club visited on 23rd June and enjoyed a good days running. We held a GL5 two day event on 13th and 14th July with trains running to a time table and the organisations AGM held on the Saturday afternoon whilst the Norwich society visited us on 17th August. Meet the Neighbours Day was a great success with Jack Manning and his wife cooking burgers and bangers throughout the event. The standard was just as good as last year – well done. We also held two Family Days. I was unable to attend the first of these and the second was very disappointing with only three locomotives running on the raised track and only about twelve members on site.

Yvonne has organised a number of birthday parties during the year, supported by a small band of enthusiastic members and earning valuable funds for the Club.

Now for a few words on security. On several occasions I have found the main door of the Club House has not been locked properly. The door handle must be pushed up to engage the locking bolts around the door before turning the key. Turning the key alone will not lock the door if the handle has not been moved up to engage the bolts first. On Friday 20th September I found that the main gate

had not been locked properly. The lock, which holds the cover down, had been locked before closing the cover. The cover must be down so that the pin on the bottom lock holds the cover in place before locking. On the same day, although the bridge was in the raised position and the control box locked the motor had been left running. If you are the last person leaving the site please take care to double check all security features.

Andy Hope

Secretary's Report

This time of the year has proved that we can have an Indian Summer Even now some of the days are still quite warm and that horrible cold chill you get when you step outside the door and your nose freezes is not quite with us yet.

As many of you heard, at our Special General Meeting on 16th August 2013 we have someone interested in buying our piece of land across the road and building on it. The pre planning queries have been raised and despite the negative outlook the prospective purchaser is still looking to put in a full planning application. One of the neighbours has also showed an interest but nothing definite has materialised. I will, of course, keep you informed as soon as there is something positive to report. If something does progress to a sale of the land I will write and ask you all to get your shopping lists ready. We already have a new kitchen requested (no it wasn't me but it does need refreshing)!

Our parties have been very successful this year with six paid for parties and one visit from a Club where people have learning disabilities. I also have a lot of interest for next year but no set bookings just yet. It looks as though we have brought in over £900 income this year from the parties. Thank you to all the drivers, guards and railwaymen who gave up their time to help out at the parties. Not only are the parties great fun to run but it is satisfying knowing how much people enjoy attending them as well as helping out. Thank you for supporting the Club and a personal thanks from me for the excellent job done. One driver mentioned the whooping it up and shouts of excitement from the children were still pleasantly echoing in his ears the following day. If anyone else wishes to come forward to assist they will be very welcome, just e-mail me and let me know.

Don't forget to book your place at the Quiz Ian Pryke is arranging for the Club for 20th December 2013. Details are on the website.

The Club purchased Trundle a couple of months ago and it has now been added to our insurance. It is one of the most popular rides when special events are held at the Club. Brian Upson and Mick Shields are going to very kindly take the engine away early in the New Year and put it's name on it. There was some talk of it becoming a pirate so watch out for when it comes back. They are doing this for the Club and Brian (Rip) will also give it a maintenance service whilst he has it. The Club is very keen to make it look less like Thomas and more like Trundle. So many thanks to both of them for this much appreciated "make-over".

Yvonne Chappell

Treasurer's Report

We welcome the following to our Society:-

Neil Bentley	Full
Angus Holdsworth	Full
Liam Keeble	Junior
Peter Bohn	Full
John Field	Full

Membership stands at 130 including 12 juniors and 1 student.

Just a reminder – subscriptions will be due 1st January 2014.
Rates will be:-

Full member	£55
Junior member	£2
Student member	£27.50

Cheque's should be made payable to CSMEE Ltd. Please note that the inclusion of Ltd. in the payee line is important. The bank will not accept the payment if this is not included.

David Cocks

The Wednesday Wrinklies Report

Link time again already. How time seems to fly!

We have all been having a good time recently on Wednesdays. Work for most of the morning and then play trains after lunch and a natter around the table. If only the powers that be would listen there would be no problems after our lunch time debate.

The track bed laying gang are still at work renewing the gravel under the raised track. Last Wednesday (2nd October) the tunnel entrance was getting nearer - there is about 10 yards or so to go. David Hammond, Gordon Ager and the gang can be seen going back and forth with their wheel barrows moving the ballast chippings from the site over the road and spreading it on the track bed.

The low walls outside of the workshop doorway have been found to be a hazard when a children's party has been held. Ian Pryke has removed the walls and smoothed the path with cement. Hopefully there will be no more people falling over outside of the workshop door in future.

You will find in this LINK a description of a modification to the ground level steaming bay exit. Over recent weeks Danny Jukes has run his Sweet Pea almost exclusively on the ground level (as have I} and this mod has made getting out onto the ground level running rails much easier. Once the level crossing gates have been opened it is now possible to drive out of the steaming bays for a run without

going back and forth to the signal box. We are hoping that this change will encourage more members to use the ground level tracks. But beware, as the points are not protected by any signals when this method of exiting the steaming bays is used. When the signal box is in use, the new control box must remain locked and the key left with the signal man

On most Wednesdays the raised track is full after lunch. It is not unusual to find four or five locos in the steaming bays wanting to run. A small number of new locos have made an appearance for Mike Gipson to carry out boiler tests.

Finally, I must say how much I have enjoyed running my B1 for the children's parties. There is nothing to beat the sound of a bunch of kids squealing and shouting " go Geoffrey go" which was encouraged by one of my guards a few weeks ago. No names can be mentioned of course but I resisted the temptation. *(That must have been a struggle, Geoff! – Ed.)*

Geoff King

Event Organisers Report

By the time you come to read this article the summer running season will have come to an end. This summer we visited the Basingstoke and Norwich Societies. Attendance numbers were low, which was a little disappointing bearing in mind the current membership in excess of 100. We only ever seem to muster about 6 to10 members with about half that number of locomotives. Why is the turn out for these events so poor? Is it the cost, are people not interested in this type of event, or is the day on which we go not convenient. Your comments on this would be welcome. (*Another opportunity for a letter to the Editor.)*

Both of the Clubs mentioned above came to visit us and were very impressed with the track layout and the club facilities. The GL5 Club visited us again for the weekend of the 13th-14th July for their AGM with running on both days.

Hopefully the winter talks programme which I have arranged will have some topics of interest for you all to enjoy, all dates for the coming winter are in the flyer with this copy of LINK and are displayed on the notice board.

I am already starting to think about next winter 2014-2015 programme. Any ideas for talks would be most welcome. If you think you have a talk that would be of interest to us all please come and speak to me and I will do all I can to help.

Moving on to next summer and Club steaming days. I intend to run a couple of very light hearted competitions when members will be asked to drive their locomotives on the raised track at a prescribed speed for a set period of time. They will not be allowed to us a watch/clock or have a speedometer fitted to their driving truck the person who gets the nearest to the set time/speed will be the winner. Ideas for a prize would be appreciated. Dates will be displayed on the notice board in the new year and also on the web site.

Ian Pryke

Britannia Return Crank Repair

It was becoming evident that the seat carrying the return crank on one side of my Britannia was showing signs of distress. The taper pin securing the return crank to the crank pin kept working loose, allowing the return crank arm to "fidget" on the crank pin. This was undoubtedly affecting the performance of the valve gear and would inevitably lead to complete failure of the fixing. This was no doubt due to the number of times that the return crank had been re-positioned and fresh holes drilled through the seat to take the taper pin. During its thirty years life the locomotive had been in the hands of a number of previous owners who may also have made modifications.

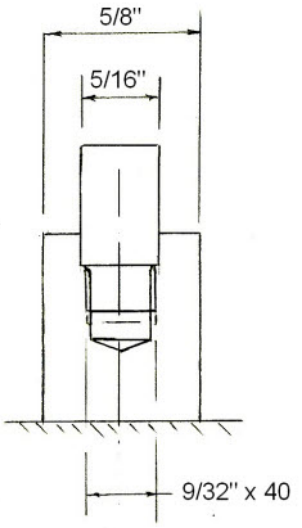


Figure 1. Crank Pin Modification

The driving axle was removed from the locomotive for the repair, which it became obvious, would have to be completed with the wheels still on the axle. Grub screws in the form of French keys secured the axle and crank pins to the wheels and they could not be moved.

Dismissing, therefore, any thought that the crank pin should be pressed out of the driving wheel and replaced with a new one, a journey to the Frinton Locomotive Works (Norman Barber's workshop!) was made where an alternative solution was designed

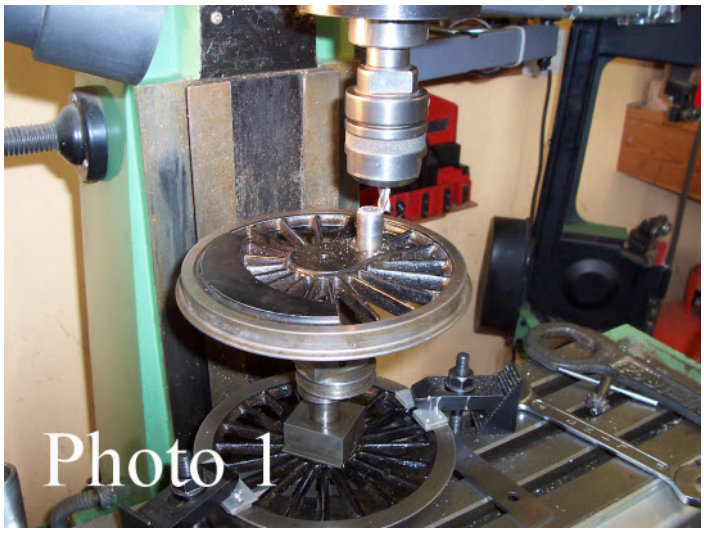


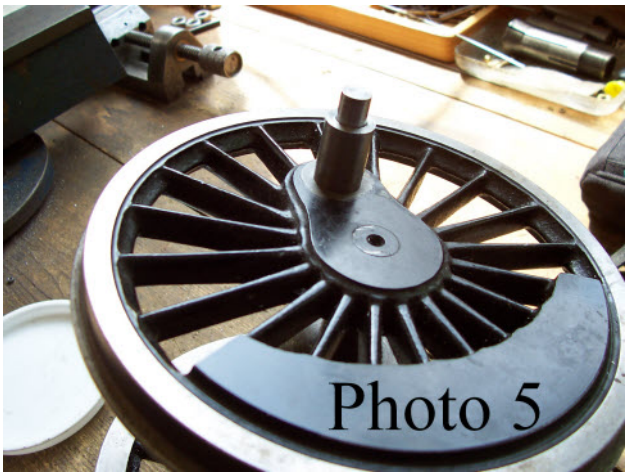
Photo 1

It was decided that the damaged return crank seating should be removed and a new seating screwed into the end of the crank pin as shown in figure 1. The seating was sawn off and the end of the crank pin cleaned up in the milling machine as seen in Photo 1. The end of the crank pin was then drilled and tapped to receive the new seating. Photo 2 shows the crank pin being located for drilling using the machines DRO. As an added pre-caution and to ensure that there was no danger of the drill wandering a simple drilling guide in the form of a cap to fit over the end of the crank pin was made. This guide can be seen in photo 3. Photo 4 shows tapping of the 9/32" x


Photo 2

40 thread in progress. The mild steel return crank seating was turned up and screwed into the prepared crank pin after cleaning and applying a dose of Loctite 603. The finished job is seen in Photo 5

The work on the first crank pin took about 3 hours. Although the problem had only arisen on one side of the locomotive there was a high risk of the same fault developing on the other side since it had the same history. It was therefore decided to carry out the same modification on the other side of the axle. This took only an hour as the design and methodology were already to hand and the milling machine and lathe were already set up.



As well as making an excellent repair this method did not require either heat or stress to be applied to the driving wheels which came through the whole process completely unmarked much to my relief.

Photos by Norman Barber

Jon Mottershaw

INDENTURED

A tale of old time learning in industry

Episode 11

On the Monday morning following his visit to Julie's house he had much to think about. The fact that both of her parents wanted a ride in the Morgan had certainly surprised him but was partially explained by that fact that her father was a millwright in English Electric –the biggest of Stafford's industrial concerns. This meant that he was fully acquainted with matters mechanical and this was supported by the presence in the Lewis garage of a Riley Lynx car. Her father had promised to show him this on his next visit. (He was pleased about this because it implied that there would be a next visit) !

It was also clear that Mr. Lewis's main interest was clocks—there were two or three clocks in every room -- some of them of the chiming variety. He wondered what it was like at 12 o'clock – especially at midnight – indeed, he was destined to learn much about horology in the coming months. Edward had also taken the opportunity to mention the device that his friend Mike had rescued from the scrap heap; and from his description Mr. Lewis had concluded that it might be an interrupter gear from a First World War aircraft. It was quite likely that Dorman's would have had a contract to make these. Of course, he'd need to see it to be sure.

Meanwhile, work in the test house rolled on irrespective of one's private life; his next engine was a 4L equipped with a high quality governor called an 'Isospeedic'. This was apparently an all mechanical governor designed to suit power generation.

Normally to get the closest form of speed control a servo governor would be specified but, as ever, the price was a factor and the "Isospeedic" was considered a good compromise. To meet the British Standard (BS 649) for electrical machines, you needed to control the speed within 4 ½ % between rated power and what was called residual load – usually 10 BHP. Most of the mass produced mechanical governors could just about meet this requirement. Combine harvesters preferred something nearer to 4% in order to keep control of the drum speed. Road vehicles were typically provided with 10% or a bit more. The pneumatic governors that Dorman's fitted to many of the 'L' type engines would be nearer 12% but for many applications it just wasn't critical. The particular merit of the pneumatic governor was its low cost.

For Dorman's, the pneumatic was a satisfactory option for many industrial applications but for those who used it on road vehicles it was destined to have an overwhelming weakness. The design featured a diaphragm in the pump which controlled the fuelling (via the rack) in much the same manner as the centrifugal system did on other pumps. The vacuum applied to the diaphragm was provided by a throttle body complete with a butterfly valve in the manifold. (This was roughly akin to a carburettor body). This butterfly valve was controlled by the driver's accelerator pedal. Both the idle speed and the maximum were set by means of the butterfly valve. It will be self evident that, for a given position of the valve, any increase in speed would generate a higher level of vacuum. At a predetermined level this vacuum would act on the diaphragm to pull the rack back and thus reduce the fuel quantity.

The link between the two was a pipe –made of, perhaps, ¼" Bundy tube. Since speed control depended on the vacuum signal in this pipe, it followed that if you could decrease that signal at high

engine speeds you could push the engine to greater things than its maker intended. Alas, lorry drivers were quick to realise this and then to devise convenient ways of temporarily interfering with the intended signal.

Some even arranged a pipe coming into the cab so that they could just open a small tap when they wanted more speed and power. Several engine types were brought to a sad end by this means but often the manufacturer could not prove that anything untoward had taken place (those involved having deftly removed the evidence prior to the maker's man turning up) and the poor old engine maker had to shell out on the warranty. Needless to say, pneumatic governors did not remain part of the vehicle engine scene for very long.

Meanwhile our hero was coming to terms with the 'Isospeedic'. Internally this consisted of two saucer shaped plates facing one another and between them were a pair of balls which moved outwards under the influence of centrifugal force. One saucer rotated whilst the other was static. The whole object was to minimise friction within the mechanism. Having set the 'Isospeedic' as per the instructions he was surprised to find Mr. Lemon standing alongside him. The latter was taking a friendly interest because this type of governor was new to him. Mr.Lemon explained that the engine concerned was for a Canadian customer (mentioned previously) who had asked for close governing to suit their radar equipment. This apparently needed a run out near to 2%-- hence the fancy governor. Edward would like to have investigated the 'Isospeedic' a bit further – such as establishing just how closely it could control the speed, but at this point a chap turned up, apparently from the makers, and presumed to take matters in hand. After a few seemingly perfunctory checks he pronounced everything to be in good order and since the engine had already been checked for power that was that. After the man had gone Mr. Lemon returned and chatted amiably with Edward whilst he began disconnecting the engine from the test bed.

Edward told him what he had heard regarding the overspeeding of engines equipped with pneumatic governors. But Mr. Lemon went on to say that even worse things could happen in a vehicle. Although Dorman's did not now supply engines for vehicles they had done so in times past. Mr. Lemon then quoted an extraordinary example of what could happen -- he cited a case of a medium sized van proceeding up a steep hill in Derbyshire.....

At the top of the hill was a tee-junction and so the traffic queuing on the hill moved in fits and starts as each vehicle, in turn, made its way onto the major road.

Because of the steepness of the hill there was much resort to revving and picking the vehicle up with the clutch only to move forward a few feet at a time. Alas, someone managed to stall their engine but then counted themselves lucky when they were able, via the clutch, to re-start it using the slight rearward movement of the vehicle on the gradient.

During these few moments of time the vehicle in front had moved forward some way and, naturally, the man concerned now gave his engine some stick to swiftly close the gap. Alas! The result of this action was to move his vehicle sharply backwards and crash into the one behind. Of course, he did not know it but his engine had restarted backwards. He, of course, had engaged a forward gear, gave it some revs—and hence the inevitable outcome.

The sad thing is that the man blamed himself, whereas at that time, many engines were capable of doing just this. (Some with quite famous names). The issue was resolved on direct injection engines by fitting a different camshaft to the injection pump. However, this was no solution for the indirects

which, as we have seen, would fire whenever the fuel was sent in. Some makers fitted a ratchet drive to the pump (BMC). Others did nothing. Eventually, the coming of the rotary injection pump provided an easy solution. (It simply would not pump with reverse rotation).

Whilst lacking firsthand experience of an engine starting backwards, Edward realised that if an engine was willing to run quite well with the timing 360 degrees in error it doubtless would be quite happy to run in whichever direction you initially rotated it.

One of his fellow apprentices – a bit older than Edward -- was sent out on a job to change the injection pump camshaft of a MotorRail shunter that they had been push-starting by means of another locomotive. Naturally, if they didn't carefully consider the position of the forward/reverse lever before giving it a shove, it was all too easy to fire it up backwards. These engines were direct injection so would not have been willing to run with the timing as far out as just quoted but if they were rotated backwards they would start, albeit with very retarded timing. As with the van on the hill this could have very serious consequences. In this particular case it had only smashed into a few empty quarry trucks but the message was obvious and Motor Rail lost no time in pressing Dorman's for a solution.

As readers may recall the Motor Rail engine was put together by Harry Moss's gang but, significantly, its injection pump and governor were of Dorman's own design and manufacture. Hence, as a solution, they had swiftly designed a revised camshaft that would not put fuel in anywhere near TDC if rotated in reverse. These were generally known as' Dee' shaped cams and proved to be a complete solution for direct injection engines only.

Whilst he was removing the 4L engine and preparing for the next one he became aware of a commotion up the top end of the shop. From where he stood he only saw a blinding blue flash and detected the sound of a large engine in some distress. From his vantage point he had some difficulty working out just what had happened; it appeared that the resistance cage that was used to give the generator engines a test load had erupted in sparks.

Later, he was called into Mr. Lance's office—though now temporarily occupied by Mr. Lemon—and asked if he could throw any light on the matter. He was mildly perplexed by this as he was nowhere near at the time and couldn't initially see why anyone would connect the incident with him. At length though, the penny dropped when Mr. Lemon told him that the battery truck was involved. It seemed that a person unknown had propelled the battery truck with some force, from a considerable distance away, whilst carefully aligning it to steer a course aimed at the resistance cage. (Readers will recall that the battery truck was very free moving). On striking the latter it caused the hundreds of bare wire coils inside it to come into contact with each other for a second or two; this was enough to create the blinding flash and hammer the engine into a near stall condition. Mr. Lemon was furious and would doubtless have physically struck the person responsible if he did but know who it was.

If he hoped that Edward might know the culprit he was destined to be disappointed. At this point Edward declared that he did not know who it was but feeling a degree of responsibility toward the battery truck – for which Mr.Lance had made him responsible -- indicated that he would make enquiries.

He thought that if he was able to identify the mischief maker he would deal with him in his own way – possibly calling upon others to assist. (He had in mind the women of the core shop -- as the culprit was certain to be a youth -- they could be counted upon to carry out their mission in a thoroughly unpleasant manner).

Unfortunately, he was not successful in this quest; he could narrow it down to two possible suspects but no further. In view of this he adopted another plan. When the truck was in the electrical shop for its routine servicing he took the opportunity to examine it from underneath; because the axle with the handle attached was a swivelling one and, it had to be carefully set to go straight to perform such a prank, he decided on a simple solution. With the aid of a long tension spring attached to one side of the swivelling yoke the truck could be made to veer to one side if it was pushed without someone on the handle. The spring was such that it did not impede the normal use of the truck. Thus it became virtually impossible for anyone to try the same trick again and furthermore the spring was hidden from normal view. He explained the action that he had taken to Mr. Lemon who was quite pleased because even if they had nailed the culprit this time, sooner or later someone would try it again.

His next engine turned out to be a 6KUDT. This meant a 6 cylinder engine of type 'K' with Unified screw threads -- the 'D' meant a particular bore diameter and the 'T' meant turbocharged. ('F' was the largest bore size but was not considered suitable for turbocharging). Normally apprentices were not given engines of this calibre and so he wondered why he was being thus honoured. Of course, it had much to do with Mr. Lemon who felt that it was time that he was given more exacting duties.

The 'K' type engine was really a development of the 'DL' – the sort that had gained the contract with the Ministry of Supply. It had several features that enabled it to be rated more competitively than the 'DL'. In particular it had wet liners (already mentioned) and also featured metered water pipes. These latter were carefully proportioned to supply the appropriate amount of coolant to each cylinder individually. Finally, of course, it was turbocharged. By comparison with later practice this gave only a moderate increase in output, say--25%-- this being typical for the time. The key factor being that even this percentage pushed the peak firing pressures up considerably. (If the naturally aspirated (i.e. non-turbocharged) unit gave a peak firing figure of 1200 psi one could expect this to rise to around 1600 psi for the turbo). This imposed an increased loading on many of the working parts with, consequentially, an increase in the chance of something failing. Moreover, this only related to the gas loading of the components whereas another major factor was the increase in heat released. This would particularly apply to the piston and rings and also to the cylinder head.

Naturally, at this early stage of such development, Dorman's were anxious not to jeopardise their reputation for reliability. On the other hand they normally aimed at fairly conservative stress values so these initial ventures into uprating would probably be acceptable. The future though, naturally, would demand ever higher ratings – the inevitable consequence of a competitive market place.

Again, the issue of the exhaust system arose (readers may recall that such turbocharged engines had previously been run by simply sticking the pipe out of the window but this practice was not popular with the people in the offices across the road !) He knew that work had been going on outside the shop to provide a proper system but would need to check as to how far this had progressed. Conveniently, at this moment, Mr. Lemon appeared and so he referred the matter to him. Duly, he returned and said that they would be only too glad to have an engine to connect up to by way of proving the system.

A feature of this engine, that was new to Edward, was the use of an air starter. This device which took the place of the normal electric starter needed compressed air to operate it. The normal factory supply being quite suitable.

He thought that the air motor itself appeared to be a Vee-four single acting engine. Presumably this layout was adopted to enable it to start from any position. Usually, these non-electric types of starter

were fitted in cases where there was a fire risk. A typical use being for a locomotive operating in a coal mine. Apparently this one was destined for such a role. In the circumstances it would not even have the normal 12 or 24 volt generator fitted and the exhaust system, fitted later, would contain a flame trap. In the old days, of course, it would have been hand started. This, though, would not be easy on an engine of such a size even with the de-compressor in use.

By comparison the air starter was a soft option. However, before starting up he had to go through the procedure of priming the lubrication system.

This practice had been introduced after the problem of the bearing failures, on the 'L' type engine, but it had then been deemed a good plan to include it in the normal test routine. This was especially important on a turbocharged engine because once it fired the turbine would start to revolve and it was unacceptable that this should happen before the lubricant arrived. And so, he connected a hand pump to the main gallery of the engine and proceeded to pump away. As in many practical situations one soon got to know, by the feel of the action, when sufficient priming had taken place. And so, with this task complete, the 6KUDT was ready to start.

Paul Davies

A Track Cleaning Machine

Members who drive regularly on the raised level track will be well aware of the ongoing problem we experience of locomotives slipping. This is primarily due to the fact that we all tend to over oil our locomotives prior to running together with the fact that oil mist is thrown up from the chimney of

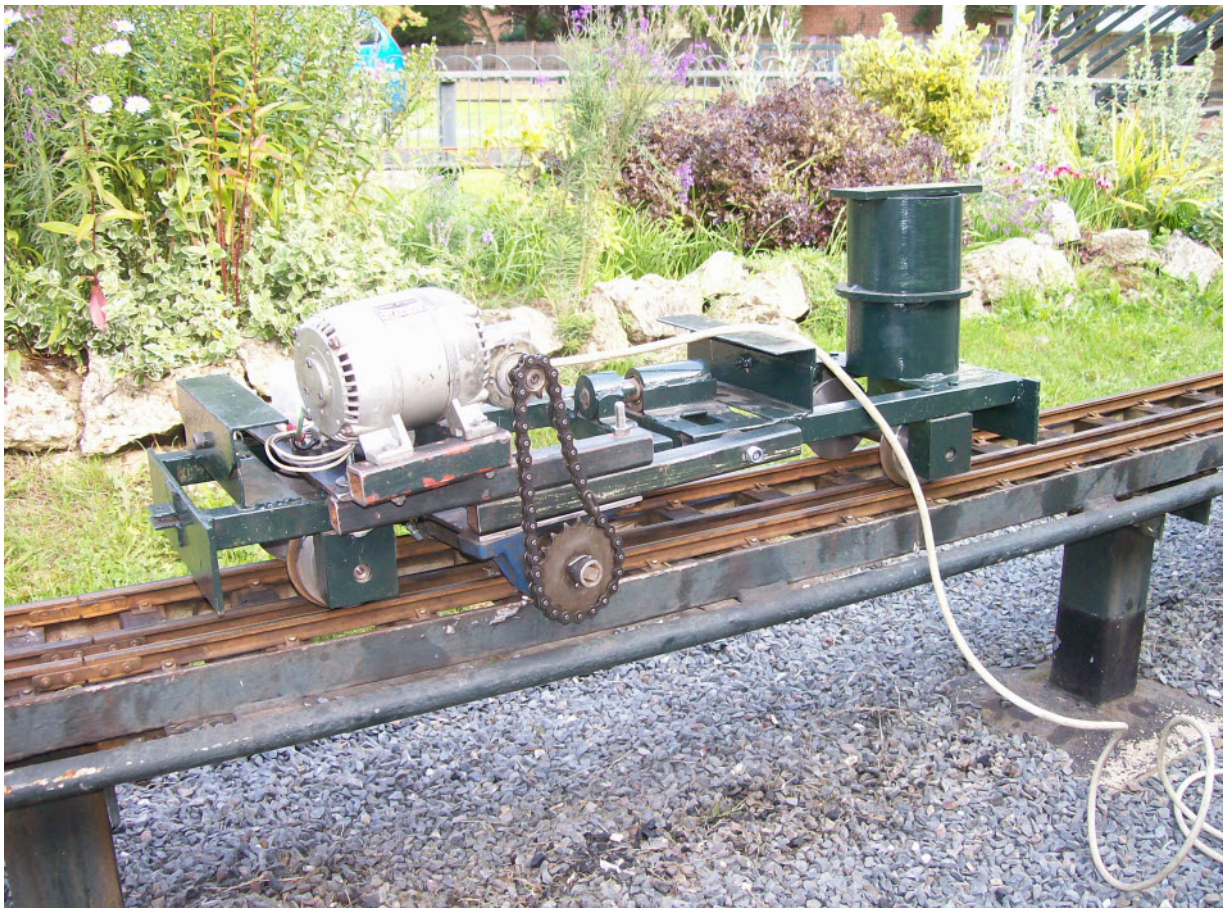


Photo - Ian Pryke

locomotives as they are driven around the track. This cannot, of course, be avoided as cylinders and valves must be adequately lubricated but the mist has to settle somewhere!

We have talked for many years about building a track cleaning machine, so a few weeks ago I decided to do something about it. The initial idea came from an article in a magazine. We already had the track levelling machine which provided a good base to start from. Two self aligning plumber blocks were found in the work shop together with the necessary materials, nuts and bolts etc. providing all that was needed to make a start.

The photographs show the finished machine. A swinging arm arrangement was made up and bolted to the track levelling machine to carry the cleaning mechanism. This comprises a drum skewed slightly across the track and supported by the plumber blocks. The drum is driven via chain from the output of a geared 240 volt motor (donated by Geoff King). The motor output runs at 90 rpm which is further reduced to about 30 rpm at the drum by the chain drive. The drum was covered with a thin layer of rubber in the hope that this would help persuade the cleaning material applied to the surface to follow the rail profile.

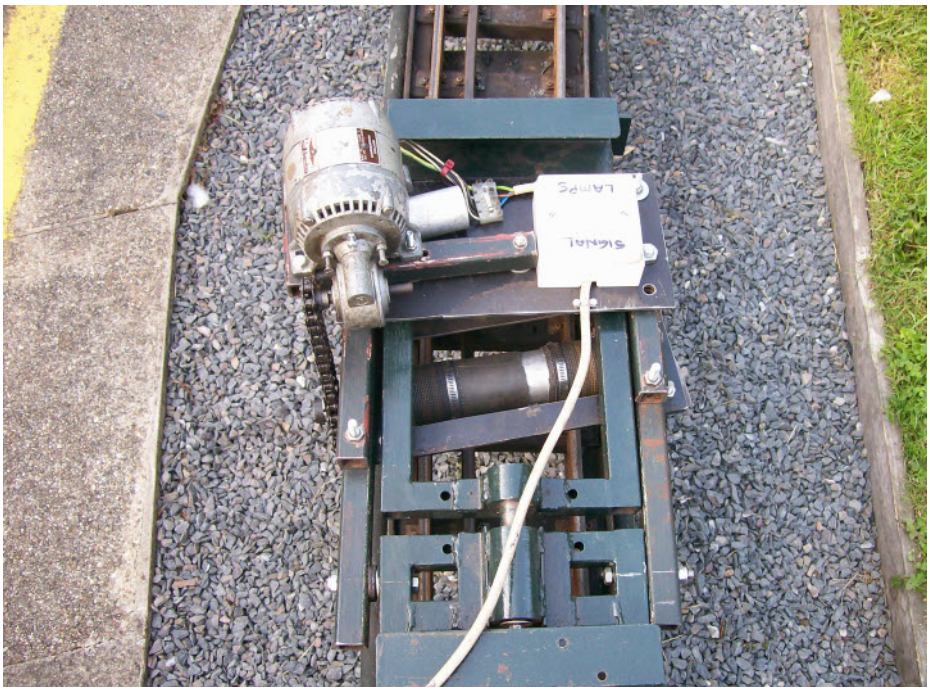


Photo - Ian Pryke

The actual material used to clean the track is called “Sanding Mesh” purchased from Toolstation Ltd. This is an abrasive mesh which is wrapped around the drum and held in place with jubilee clips. The cleaning drum is held onto the rails by the weight of the drive mechanism and in use the machine is pushed along the track manually against the rotation of the drum. A long power lead is required, of course, but this is not a problem since the operation is rather slow – about twenty feet an hour. After one or two adjustments the machine appears to perform as planned and we have a viable track cleaning machine.

Although it is very slow in operation it does remove all the built up muck and grime from the rail head leaving it nice and shiny. The application of a solvent was tried prior to using the cleaner but it was found that the mesh quickly became clogged with the removed muck and grime so now the operation is carried out dry.

So far the majority if the inclined sections of the raised track have been treated. To date I have no idea how often the track will have to be cleaned - it will depends on the amount of over oiling which takes place.

Comment has been made about the use of a sanding mesh and the possibility that metal is being removed from the rail head. As far as I can tell this is not happening but if it is found that metal *is* being removed then I will have to look again at the type of cleaning material used.

If anyone wishes to see the finished article it will be found stored on the bench beside the Myford Lathe in the work shop. Please do not try to use it in my absence but let me know if the track has become slippery again and I will sort it out. Finally, I would like to thank all those members of the Wednesday and Sunday gangs who have helped me with this project.

Ian Pryke

"Meet the Neighbours Day" 2013

This year the CSMEE held its now annual "Meet the Neighbours Day" on Sunday the 8th September.

We handed out invitation to each of our 113 near neighbours in President Road and the other roads close to our Lexden site.

From the initial response to our invitations it appeared that we were going to have a better attendance than last year, in fact when handing out the invitations some of our neighbours stated that they now plan their holidays around our event!

Photo - Mick Wadmore

In addition to invitations to our near neighbours, we also handed out some "special" invitations to those that had expressed an interest in visiting our site during exhibition and display programmes held at the summer shows.

In addition to operating passenger rides on both the raised and ground level tracks, we also had a small show of members work in the club house.

Photo - Mick Wadmore

Shortly after nine-thirty, we started to set up our displays in the Club House, together with the necessary signalling and other tack work, Jack's Barbeque stand etc. and thanks to the help from the members together with some of their wives all was ready to welcome our guests by the scheduled start time of 11.30. Just after the appointed hour we signed in our first guests and trains were standing by ready to give rides on both the raised and ground level tracks. The ladies in the kitchen were also standing by to dispense tea, coffee and light refreshments.

Throughout the day there was a steady arrival of our invited guests of all ages, over one hundred and eighty in all. It was noted that many of our guests arrived earlier than last year. This may have been due to the weather forecast predicting rain later in the afternoon.

Rides were given throughout the day by two trains operating on both raised and ground level tracks

From shortly after mid-day Jack and Jackie Manning together with Keith Paine started serving their delicious Burgers from the barbeque stall. This continued, frantic at times, until rain stopped play shortly before three o'clock.

At twelve midday, the Mayor and Mayoress of Colchester arrived to be met and introduced to the Management Council, who then showed them around the facilities we enjoy at our Lexden site. In addition to being shown around our club house and the working of the ground level signal box, the Mayor and Mayoress also enjoyed train rides on both the raised and ground level tracks, before leaving after spending nearly two hours with us.

Shortly after the Mayor and Mayoress left it started to rain. This turned heavy at times so the barbeque “chefs” transferred their set-up to the cover of the clubs garage.

Most of our guests had departed by the closing time of three o’clock, when we started to pack–up. The site was cleared by four.

I would like to thank all those members and their wives who put in the effort to make this year’s “Meet the Neighbours Day” such a resounding success. The feed-back received from our guest as they left was that they had had a fantastic and enjoyable day and looked forward to being invited a similar day next year.

Mick Wadmore

CSMEE at the 5 PARISHES SHOW 2013

Once again, the Society put on a display of members’ models at this year’s “Five Parishes Show”, held on the Monkwick Ranges, Fingeringhoe on Sunday the 4th August.

Photos - Mick Wadmore

We had intended to erect our Gazebo on Saturday afternoon, however due to the high wind we encountered when we arrived together with the forecast of higher winds expected over-night, it was decided that we would erect the Gazebo on Sunday morning.

When Sunday morning dawned the winds had dropped and it was fine dry and sunny, which conditions lasted throughout the day, i.e. NO rain - a first for us at the Five Parishes Show.

The normal stalwarts were present assisting with the display of their models comprised of Lives Steam Locomotives, Stationary Steam Engines, Boats, etc. and assisting with the Stewarding of our stand throughout the day. This year three members, Terry Gardiner Julian Staunton and Robert Geoghegan, new to the Exhibition programme, came along offering their assistance and joining in the fun(?)

As usual we had a large number of visitors thoughout the day. These included the current Mayor and Mayoress of Colchester who both spend time showing an interest in the models on display, and in CSMEE activities in general. In fact they have made a request to visit our Lexden club site and see what we get up to there.

At 4-30 pm after a long hot day we started to pack up the members models and dismantle the Gazebo and were off the site shortly after five.

Thank you to all of those members who again help make this a success in promoting the activities of the CSMME.

Mick Wadmore

CSMEE at the GREAT BENTLEY SHOW 2013

This year's "Great Bentley Show" was held on Saturday the 31st August 2013 and once again, the Society put on a display of members' models. As this was the last exhibition of 2013, the turn-out of members and their models was the best of the year.

Photos - Mick Wadmore

In addition to the usual model display, we had models not seen before including a nearly completed 5" gauge WD Austerity locomotive (the "THING") being constructed jointly by two of our long-standing members.

We erected the Society's Gazebo by 10.30 on a warm and sunny morning which developed into a glorious and dry and sunny day.

As usual we had a large number of visitors throughout the day, who showed a great deal of interest in the models on display. We handed out a large number of the Society's flyers, and a lot of interest was shown in the "Children's Birthday Party" leaflets.

After a long hot day we started to pack up the members' models and dismantle the Gazebo at 4-30 pm. We were off the site shortly after five.

Finally, I would like to thank all of those members who once again help make this event a success in promoting the activities of the CSMME Ltd.

Mick Wadmore

Letters to the Editor

Club Constitution

Dear Sir

In the JULY issue of Link TWO items particularly caught my eye.

Firstly, your comments in the Editorial regarding the length of time a member serves on the Council and secondly, Geoff King's comments regarding the cancellation of our appearance at this year's Aldham Steam Rally.

In my opinion both the above points are interlinked.

I had to cancel our appearance at the Aldham Steam Rally, due to only having **THREE** members who said they would be available to erect the Gazebo and put on a display of their model on the Saturday. This may possibly have been increased to eight on the Sunday.

It was unfortunate that a number of the usual stalwarts who regularly help out at all the Exhibition programmes, had made other commitments.

It should be pointed out that the exhibition programme and the demonstration of members' models is one of the greatest contributions to enrolling new members into the Society.

Along with the Exhibition Programme another major contributor to the publicity of the Society's activities is the "Children's Birthday Parties", which are so well organised by Yvonne Chappell.

As far as Exhibitions are concerned I would like it to be recorded that other than me the only other member of the current Society's Council of Management that regularly assists with the Exhibition Programme is Geoff King.

In the case of Children's Birthday Parties, again there is an apparent lack of support given to these by the current members of the Society's Council of Management.

Further, it should be pointed out that when the CSMEE Ltd invited the GL5 to operate at our Lexden site nearly all the SEVEN directors of the Society's Council of Management were present.

Now to the point in your Editorial of the July issue of LINK, regarding the long -standing of members of the Council of Management, it is my opinion that the Society's Bye-Laws should be changed to ensure there is a regular turn-over of the Council's Directors.

I am also of the opinion that most, if not all, of the other Model Engineering Societies that we attend as guests or are invited to run on our tracks operate a time limit that a member is allowed to serve on their Committeel.

If the current Directors on the Council of Management were forced to stand down, it would be very interesting to see which new Society members would come forward. I am sure they are

out there somewhere. Let's face it, if any of the newly elected Council members did not live up-to expectations with the change to the Bye Laws, they could be voted off at the following AGM.

The above comments, observations, and opinions are solely mine and perhaps I'm speaking out of turn and as a lone voice. However, I am sure the Editor of LINK would like the opinions or comments of other members of the CSMEE Ltd. regarding this or any other matter.

Mick Wadmore

No Mick, you are not a lone voice. - there has been a considerable amount of comment by other members on the subjects you mention. As you say, I would welcome letters with comments and opinions on these or any other subject. Editor

Club Locomotives

Dear Sir,

As a member who joined the club in the 1960's I remember a locomotive project that had been started in those days. A chassis and wheels and not much else at the time. This was the start of Firefly.

The committee of the day had commissioned this to replace Butch, which had steamed countless miles earning money for the club at fête's.

However, the Firefly project stalled and lay dormant for many months. Then Albert Morrison became the project leader. An optician by trade, Albert was the Club secretary for many years and a fine model engineer.

Parts were contracted out to many willing workers who toiled away for many hours in their workshops. Eventually with Albert's guidance, doing a great deal of the work himself, the locomotive was finished. Firefly was painted by Albert who was a dab hand with a brush.

I feel it would be nice if Firefly was a bit more prominent at Club shows and running days but better still to be seen running on the track along side Sweet Pea and Butch, the locomotive that Firefly was going to replace 45 years ago.

I think we owe it to all those fine model engineers past and present that worked tirelessly to make this happen.

Dave Hammond

Jottings from the Workshop by "Artisan"

An Interesting Valve Gear

During a short holiday in the spring of this year I took the opportunity to visit the Didcot Railway Centre. Among the static exhibits at the Centre is a very interesting little locomotive incorporating a most unusual version of Walschearts valve gear. (Photo 1)

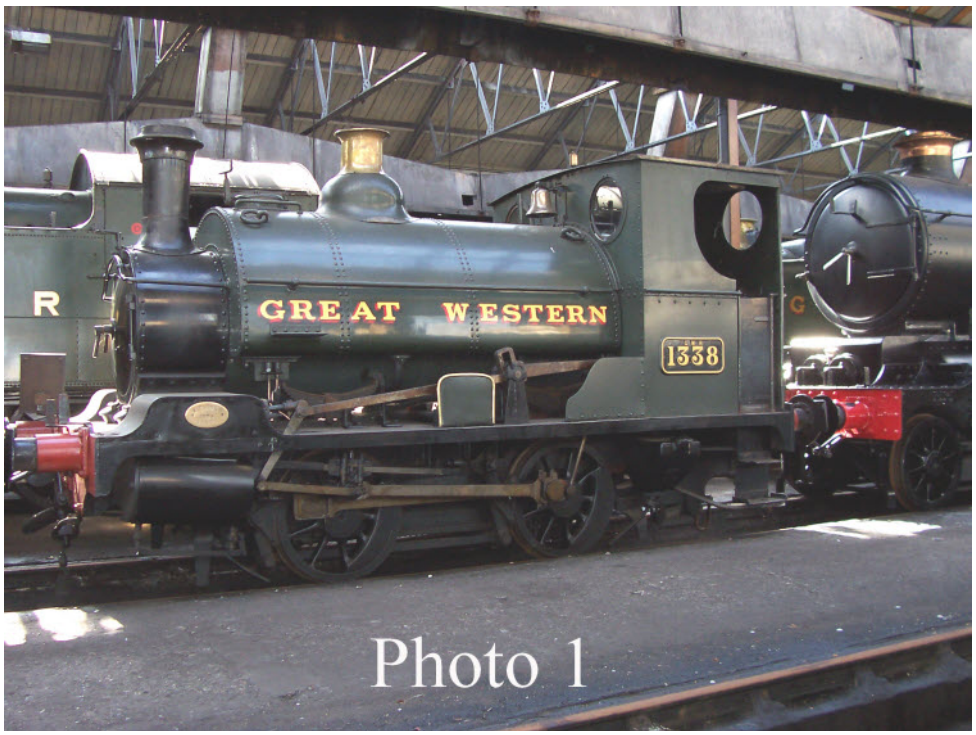


Photo 1

The locomotive itself is the only survivor of a class of two built by Kitsons of Leeds in 1898 for the Cardiff Railway. This railway, owned by the Marquis of Bute, was the smallest railway to be absorbed into the Great Western in 1923 and operated a "main line" of eleven and a half miles connecting to the Taff Vale railway together with 120 miles of dock and colliery sidings. This little engine was built as Cardiff Railway number 5, and together with its twin number 6 was inherited by the GWR who renumbered them 1338 and 1339. Number 1339

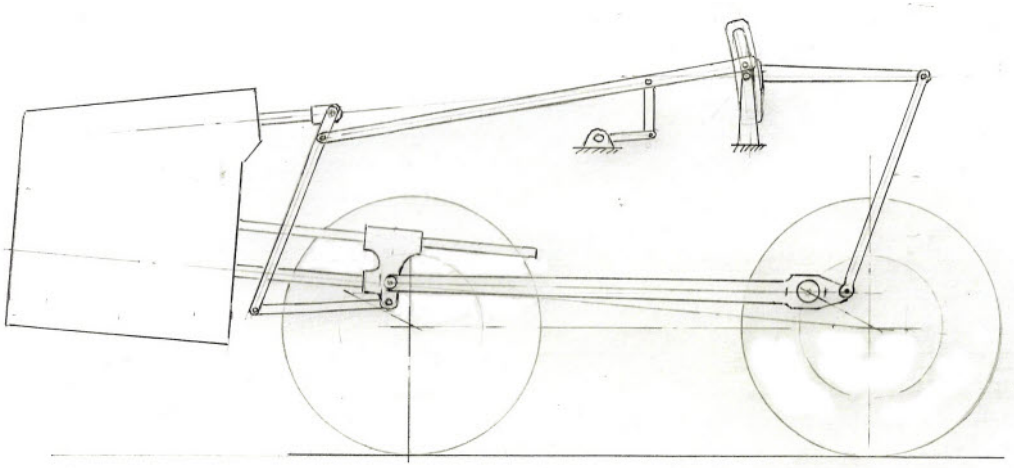


Figure 1

was scrapped and cut up in 1934 but 1338 was retained, initially in store but then on loan to Stewart's & Lloyds Ltd. during the Second World War. It returned to GWR in 1943 and served in various dock locations until being finally withdrawn from service in September 1963. It was in fact

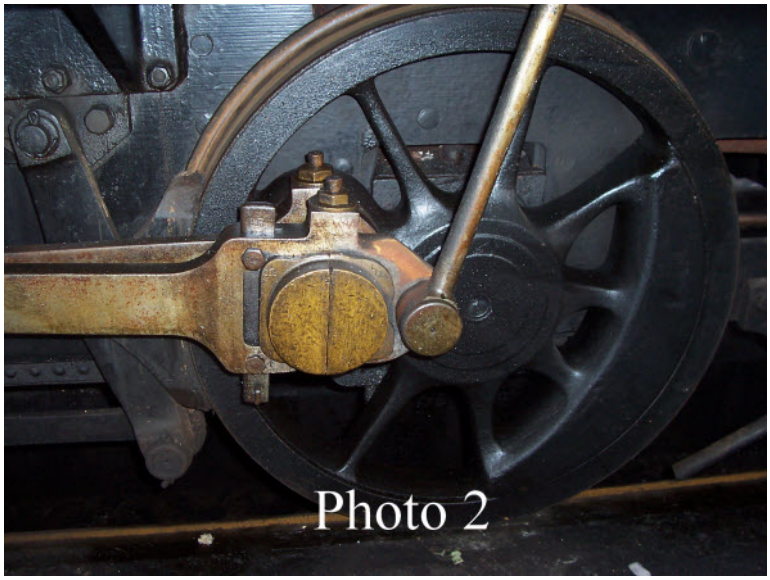


Photo 2

the last standard gauge locomotive absorbed by the GWR to be withdrawn from service having run 354,000 miles in GWR and BR service.

The feature of the engine which particularly attracted my attention was the valve gear (Figure 1). This is described as Kitson-Hawthorn valve gear and is a version of Walschearts gear originally developed by Kitson's for use in tram engines, of which they built about three hundred. As will be seen from the diagram and photographs, the drive for the expansion link is derived from an extension to the end of the connecting rod (Photo 2) rather than the usual return crank. As readers will appreciate, it is the quadrature component of the valve motion which is derived from the expansion link in Walschearts gear. The drive for the link is normally obtained from a return crank set at 90 degrees to the main crank. The link drive derived from the end of the connecting rod is, of course, in phase with the main crank and the 90 degree phase shift necessary to drive the link is achieved by using a connection at right angles to the motion centre line (Photo 3). The connecting link which does this performs the function of the eccentric rod in a

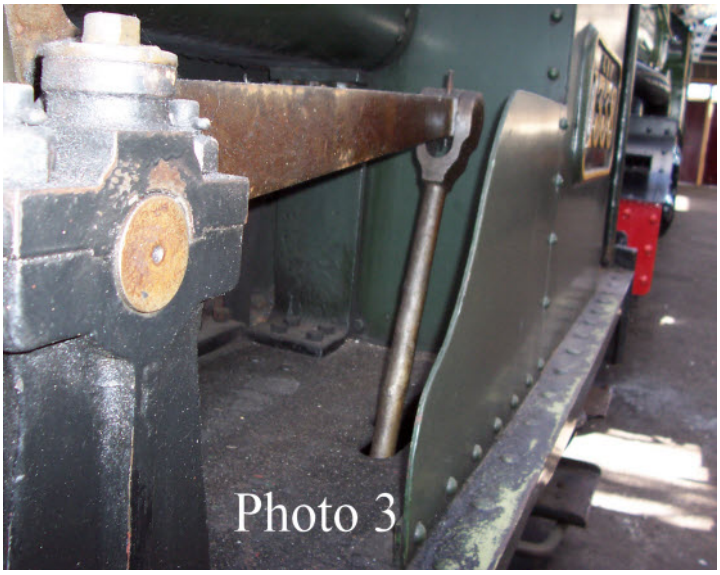


Photo 3

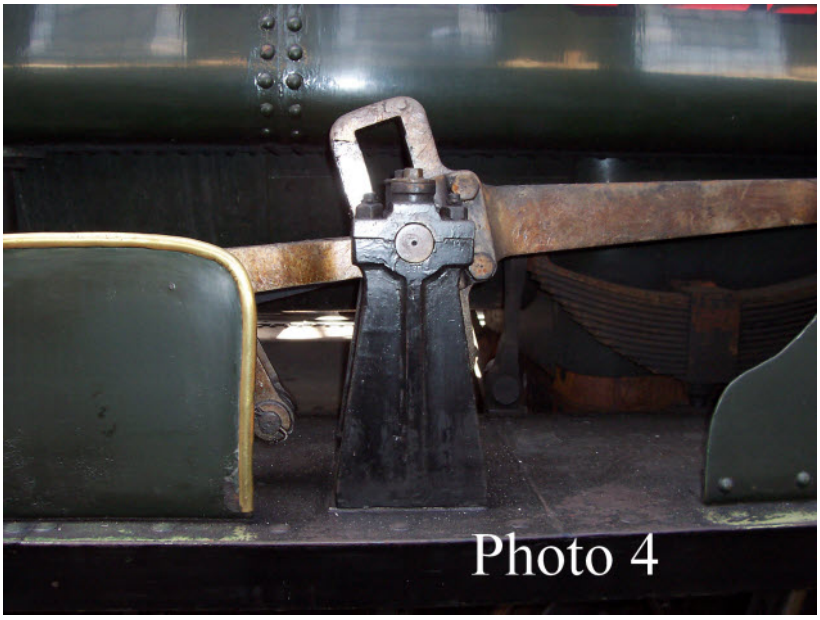


Photo 4

conventional Walschearts gear but because it is attached to the outer end of the connecting rod its linear motion is even greater than the cylinder stroke and the drive arm of the link must be made long enough to ensure that the link swings through an acceptable angle (Photo 4). The in phase component of the valve motion to achieve any lead required is provided by the usual combination lever driven from the cross head (Photo 5).

Specification

	Prototype	5" Gauge model
Overall length*	22' – 9"	24"
Wheel base*	6' – 6"	7"
Cylinders	14" x 21"	1 1/8" x 1 3/4"
Driving Wheels	3' – 2 1/2"	3 7/16"
Boiler diameter	3' – 10"	4"
Weight	25 tons – 10 cwt	Estimated 65lbs

* These dimensions estimated from photographs

The disadvantage of driving the link in this way is that, as with radial valve gears such as Hackworth, Marshall and Joy gears, the valve events are upset by movement of the axle within the engine frames. This is unlikely to have been of great concern for this little locomotive however, which would have spent most of its time in shunting wagons in the docks.

The idea of a model of this unique prototype is very appealing. It would be quite quick to build ("quick" being a relative term!), would be light and easily handled and "different"! The table shows the principal dimensions of the prototype together with suggested sizes for a 5" gauge model. Even a 7 ¼" gauge locomotive would still be relatively light and easily managed.

Wheel castings for one of the many standard design could probably be pressed into service and the boiler for one of the small tank engine designs could no doubt be adapted without difficulty. Cylinders and other parts could be fabricated to avoid pattern making. The prototype incorporated a well tank between the frames and this could be filled with lead on the model to improve the adhesive weight. The prototype was not superheated but anyone building a model would probably fit a super heater of some type.

Unfortunately there do not appear to be any drawings of the prototype available and it would be necessary for any prospective model builder to spend time at Didcot with a camera and a pencil, paper and measuring tape. Anyone interested?

LINK No. 46 –March 2014

Articles and reports for the March 2014 edition of LINK should reach the editor by Thursday 20th February. Note that this deadline is for last minute news items and reports. Technical articles and letters should be submitted at the earliest possible date.

If being prepared on a computer the preferred format is Microsoft Word for text and jpeg for pictures and drawings. Material may be sent by e-mail as attachments (not as part of the e-mail itself) or provided on DVD. If you are not a computer addict hand written copy is acceptable. If in doubt, give me a call – I am here to help!

Editor

GROUND LEVEL STEAMING BAY ACCESS

Members may have noticed that a black box has been bolted onto the railings close to the ground level steaming bays. This box contains new local controls to facilitate passage from the steaming bays to the main line without the need to keep going back and forth to the signal box to change points Those who come along on a Wednesday will know about this as they have seen work in progress and given assistance on occasions installing pipes through the ducting. It is now possible to move from the steaming bays out onto the up main line without the need to keep going back and forth to the signal box to change the points.

When preparing to leave the steaming bay do not forget to take out the gate locking pins and put them into the gate interlocking box in the signal box. After starting up the compressor it is necessary to go to the signal box to open the level crossing gates (lever 36). The key to open the local control box on the railings will be found in the signal box.

Inside the control box are three valves which control the air circuits used to work the motors of the points between the steaming bay head shunt and the main line. To operate the points to exit the steaming bay proceed as follows. Lower all three levers in the box to the horizontal position. The points from the steaming bay will now both change over to allow exit from the steaming bay road. Drive out onto the up road (inner circuit), stop when clear of the points and walk back to the control box. Raise all three levers to the vertical position to change the points over to run on the main line. The control box should now be locked with the padlock provided to prevent unauthorised changing of the points and the key retained by the train driver in a similar way as for the raised track bridge key.

It MUST be remembered that when using this method of leaving the steaming bay there is NO protection provided by any signals unless control is returned to the signal box by raising all the levers in the local control box. When the signal box is being operated by a signalman the local control box must be kept locked and the key to the box left with the signalman. After a run, do not forget to return the levers in the control box to the vertical position, lock the box and return the key to the signal box. The control box cannot be locked unless the levers are in the vertical position. If more than one train

is using the ground level tracks, return all three levers to the vertical position and lock the box, retaining the key in a similar way to the system used for the bridge on the raised level track, telling other drivers if you are returning to the steaming bays.

We are hoping that this modification will result in more people making use of the ground level tracks. It is only necessary to know how to start the air compressor (instructions are located in the compressor house) and to open the level crossing gates, which only involves one lever to pull off in the signal box after removing the locking pins and inserting them into the gate interlock box in the signal box . Instruction will be given to anyone who feels they need it. Just ask any committee member.

Geoff King

Memories of the Basingstoke Club Visit

Photos by Geoff King and Editor

Colchester Society of Model & Experimental Engineers Ltd
Limited by Guarantee. Incorporated in England Reg No 3052023
Clubhouse and registered office:-13A President Road,Colchester. CO3 9ED
Tel 01206 769192 WEBSITE www.csmee.co.uk

OFFICERS and OFFICIALS of CSMEE Ltd

President, Chairman of Council and Director
Andy Hope

Company Secretary and Director
Yvonne Chappell
Email: secretary@csmee.co.uk

Membership Secretary
Mick Wadmore
Email: membership @csmee.co.uk

Treasurer and Director
David Cocks
Email: treasurer@csmee.co.uk

Events Organiser and Director
Ian Pryke

Club Badged Clothing and Director
Geoff King

Directors
Alan Illett
Mick Wadmore
Alex Walford

Boiler Inspectors
Gordon Ross
Alex Walford
Mick Shiell
Mike Gipson

Webmaster
Brian Alderman Email: webmaster@csmee.co.uk

Link Editor
Norman Barber
Email: linkeditor@csmee.co.uk