Reading Society of Model Engineers
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The Prospectus

January 2015

The Jones brothers 7 1/4" gauge A4 "Wild Swan" exhibited on the RSME stand at Sandown Park last December. Photo Mike Manners

HAPPY NEW YEAR ENGINEERING STYLE
AUDIS AND ADHESION
A DAY IN THE LIFE OF A MIS SPENT YOUTH
EXHIBITION PICTURES
WINSTON CHURCHILL

President
Les Dawson
0118 969 4654

Vice President
John Sargeant
01491 681520

Treasurer
Jim Brown
0118 958 7247

Secretary
Peter Harrison
secretary
@RSME.co.uk

Editor
John Billard
0118 9340381
john.billard@virgin.net

Free to members
50p when sold

DAWSON'S DIARY kept by the President

Chris Simon and his track gang over the past two Wednesdays have been sorting out the ground level track as the weather predicts it gets in the way at times. But stayed dry long enough for them to straighten out the line for some distance this time an ongoing job throughout the season. It is with members like these which -make the RSME tick. Many thanks to all concerned.

The last birthday party was very wet but the families seemed to enjoy rides on the line. Members on the station spent their time wiping down the trollies. The young ones seemed to like the puddles more than the trains. Most if not all were jumping up and down in the water then have a ride. Great fun! Anyway it was said by the grown ups to be a lovely day for them and the children getting wet and thanked us all for a good day. Only the British can do that.

Alastair Milne on club night brought along a very nice 7 ¼ " wheel casting for his latest project a Great North of Scotland Railway 4-4-0. You do not see many examples of models of this loco on the GNoSR these days.

On yet another Wednesday Chris Simon and his merry men have straightened out the ground level track as far as the station in readiness for Santa Sunday.

December is a busy month for the club with Christmas dinner, Father Christmas comes again, Boxing Day run and the ME exhibition at Sandown Park for three days. Speaking of which we had a good three days at the show. The RSME came away with some awards, Mike and Chris Jones were awarded a silver medal for their lovely A4 "Wild Swan", Alan Thatcher received a Very Highly Commended certificate and a commended certificate for his two ic engines. Well done from us all. Nigel's Class 9 2-10-0 pulled in the visitors also Chris Cory's loco and Stuart Higgins stationary vertical Stuart Number 4 engine. Lots of interest shown in those. We had a good mix of exhibits. We must thank Mike Manners for doing a good job with help of the members.

The members enjoyed a very nice Christmas dinner at the Sindlesham Mill last Wednesday with many thanks to our Alf for getting it all arranged this year. It was good to se Jim Senior back on his feet once again. Keep up the good work Jim!

Next Sunday is Santa time to visit the RSME once again. Let's hope it will be fine this year.

May I wish all the membership a very happy New Year and all the best for 2015.

PONDERINGS by 61249

Its Christmas 2014 and what does “Vorsprung Durch Technik” mean to you? Since 1982 it has been the strapline for a well known German car maker. Literally “Progress through Engineering” the brand image is one of solid, safe, and clever German engineering. Now turn on the radio to Classic FM and listen to a current advertisement which is running at least twice an hour. The theme of it is that the “Quattro” all wheel drive system is so good that drivers need never bother listen to a weather forecast again. To the Marketing department this hits the Classic FM audience of rich young impressionables in a sweet spot. The car is so clever it saves me time and effort, I can brag about its prowess at parties and in the office, and drive it how I like when I like – clever folk these Germans, better than us Brits.

What a UK railway engineer knows is that this is complete rubbish on at least two important counts. Safety and Technik. Safety because possibly the most important message you can get from the weather forecast as a driver is about leaving more time for your trip as mist and fog are around. Quattro does nothing for visibility. Technically it is wrong in that it confuses the use of ***available*** adhesion with what happens when there is effectively ***no*** adhesion. I am sure that Quattro is a great and very clever drive system, but rest assured, if you are on sheet ice and there is no adhesion for it to work with, you are still stuffed. No grip, no control.

What has all this got to do with these articles and Prospectus readers? Well, the Cost Effective Maintenance (CEM) Project as described in December Prospectus hit its peak around 1987. The scene had been set for significant private sector involvement in train maintenance, the main works had been sold (ABB) and the Level 5 depots (Chart Leacon, Cathays, Stratford, Springburn, Wolverton) were being run as a unit and were ready for sale as

well. The Project was to be a stepping stone for me personally into Network South East as Maintenance Engineer for the Director of Traction and Rolling Stock. In terms of these articles, there is the chance to take a breather and consider a subject that runs through all railway engineering, which is safety.

This subject had fascinated me ever since I read "Red for Danger" the LTC Rolt book when I was under 10 years old. With the bible, it makes the two books which I have read through more than once. Some years ago I lent my copy to a friend (can't remember which) and the expected happened, but the internet is a good source of data on accidents now, so the impact of the loss is almost totally mitigated. Readers who stay with these articles to the bitter end will see how this interest still has an impact on my railway activity well into retirement.

But in 1987 one aspect of it came across my desk in an interesting way that has had long term influence on the industry. The subject was Low Rail Adhesion, or simply, the ability to stop. My engineering boss called me in and said "We have a problem, the new class 159s on the Waterloo Exeter route will not run this autumn unless we do something about them. They have slid through several stations and some red signals, ASLEF (driver's trade union) have got involved and we have a very clear message to that effect. Its May 1st today and we have told ASLEF we will sort it by October 1st and this autumn's leaf fall. No-one knows what to do yet but you soon will as it is your job now. The good news is that our research outfit in Derby have trialled a possible solution so I suggest you go and have an early look at it".

This conversation led me into a subject and over the years, some expertise. I could at this point bore you rigid with dendrology (the science of trees), abscission (what happens to leaves every autumn) and μ, the coefficient of friction between the wheel and the rail. I may do this next month, but I had learnt that when the boss tells you to do something then they won't hear a word you say until its done, so off I went to Derby to see the "solution". What I found was a box wagon, into which was mounted a fire extinguisher firing head, fitted to a sand tank. It had fired once and did, I acknowledge, deposit some sand on the rail when it did so. The whole thing was held together by string and sealing wax, and as a practical solution to fixing 30 trains in 5 months it had all the appeal of a packet of paracetamol in controlling the ebola virus. What happened then was that we put together a team comprising those who knew a lot about rail adhesion (BR Research), some operators (including ex drivers), some rolling stock folk, (including those who knew the class 159), some private sector design/manufacturing capability (starting with the fire extinguishers) and most important of all, someone who could run a tight project.

At the end of our first discussion we had decided that although paracetamol might not be a cure for the problem, what we had was the basis for a solution that might remove the headache that was ASLEF and the class 159. The drivers on the group confirmed that there was a real problem, backed up by

the operating statistics that showed punctuality took a real dip in the autumn, station "run throughs" were far too common and new trains were part of the problem, not the solution. Against this the class 159 engineers confirmed that the class 159 braking system was the railway equivalent of "Quattro", and made brilliant use of available adhesion, so any failure must be the result of poor driving technique. The folk from research described what BR as a company knew about it. This turned out to be quite a lot, and much more than anyone else in the world. For years they had been towing a wagon around the system and actually measuring the adhesion between the wheel and the rail. This was great to know and a lesson in how understanding the basics is essential to getting at the root cause of a problem, and viable solutions. To my uncertain knowledge no other railway has ever done this, before or since. The data was priceless and a tribute to the quality of BR Research 1970s and 80s. Within a fortnight we went to tender for the design and fitment of a "one shot" emergency system which once used, would mean that the train would have to be taken out of traffic. What it would do was put sand in front of the wheel and deliver some grip where none existed naturally, this would help the train stop, but more importantly, it would give the driver confidence to drive the train in those moments that had hitherto delivered a slide and brown trousers. History records that we delivered the system, the modification and the fleet for that autumn, a success!

As for the stupid "Quattro" car advertisement – I have mailed the customer services dept. at Audi, the only address available on their site, and have asked why they fit snow tyres for winter in Sweden. I do not expect a reply in English but will let you know if I get one!

Ian Osborne provides the picture overleaf which he took at Salisbury Depot on 28th May 2009. The two car unit is a 158/8, which is virtually the same as the 159, which is a three car unit. Apart from the extra carriage he is not sure how you tell the difference. So the other two sets behind the 158/8 might be 159s.

Salisbury Depot was built specifically to maintain these units. It is on the site of the Exhibition Train depot.

AN EPISODE DURING A MIS SPENT YOUTH by 3450

Reading about Mike Burke's footplate experiences and seeing the picture of the Bullied Pacific , not to mention the picture of the 'ED' at Feltham in the 'Prospectus' reminded me of an episode in my mis-spent youth that perhaps ties both these articles together.

It was in the summer of 1967 and I was a new recruit to the Southern Region of British Rail, based at Durnsford Road (Wimbledon) Depot, after completing an engineering apprenticeship, most of which was spent in Derby Locomotive Works. At the end of my time in Derby I was asked where I thought my career ought to progress and I somewhat foolishly expressed a wish to join the running maintenance department. This was not well received by the Workshops people who had just paid my salary for two years and I guess, as a sort of punishment, they drafted me to what was regarded as a 'tramway' down south.

But tramway it definitely was not, and in my eyes Wimbledon depot had two things going for it that Derby could not match. The first was that the Waterloo- Bournemouth route was being electrified at 750 volts DC and 4REP tractor units of 3200 horse power were being trialled, and the second was that steam trains were still operating, just, and my boss had a nominal responsibility for Nine Elms steam depot.

So I could cut my teeth on a new form of electric traction in the morning, and see Bulleid Pacifics on the Basingstoke commuters on the way home in the evening. One part of my work was to keep an eye on the Western

'Warships' that were operating on the Waterloo- Exeter services at the time, so I had the best of all, or nearly all, forms of traction unit to play with!

So it was that on the very last week of steam traction out of Waterloo, just before 'E-Day' on 7th July, I just happened to be at Waterloo seeing the excellent and very conscientious Waterloo diesel fitter , Jack Gardner. Jack mentioned in passing that the class 47 loco that was booked to work the down Bournemouth Belle had been failed by the driver on arrival off an up service and would I care to give him a hand sorting it out? Alternatively, and somewhat mischievously, he mentioned that the 'Belle' would have to be worked by a steam loco in its place 'if I wanted to have one of the last trips on a very famous train'. Well, the defective window wiper was soon sorted but in the meantime the steam engine was on the train and I was able to 'slip off' and join the crew on the footplate of an unmodified 'West Country' pacific at the head of 13 heavy Pullman cars. I thought I was in clover and wondered, for all of a second, what my boss would think of his new technical assistant wasting his time on steam traction if he knew what I was up to.

But within a few seconds I realised that this trip really was going to be one with a difference! The driver only just managed to acknowledge my presence, and the fireman was cursing quietly whilst wrestling with the fire-irons and trying to liven up a very dull and lifeless firebox. Two things definitely not in our favour were that the driver, expecting to be taking a diesel, was wearing his new uniform, and the loco had been hurriedly turned round at Nine Elms without being prepared or fire- cleaned. So things were a bit tense, to say the least.

The fireman had the blower full on and the fire started to show some signs of life but the driver told him to leave the water alone until the boiler pressure got a bit nearer the 200 mark! We got the right away before the fireman had a chance to get much coal into the box and the driver pulled the whistle chain and opened the regulator -but nothing happened. He got to work on the reverser winding it back and forth and after some seconds we began to move, but oh so slowly. We crept over the crossings toward the main line and slipped a bit – not violently as the loco didn't seem to have the strength for a good blast and I realised that a lot of the work getting the train on the move was being done by the M7 tank engine on the rear that had brought the stock into Waterloo. We struggled on towards Vauxhall at not much more than walking pace with the fireman still working the fire irons and getting the injector going. I looked for some decent lumps of coal from the mound of dust in the tender and this seemed to please the fireman who deftly threw them onto the liveliest bits of the fire. He lent outside the cab, I guess to check the injector water, and yelled for me to come over, just as an M7 tank engine overtook us on the slow line! It was our banker!

This seemed to encourage our driver who opened the regulator a touch and the engine responded with a hesitant sort of a chuff. We accelerated, what a word! to around 20mph and this big train glided slowly round the curve at

Clapham Junction. The fireman now started to shift coal into the box in earnest, and we were rewarded by showers of dust and ash as the exhaust from the chimney increased. We swept past Wimbledon Depot at a full 30 mph with the exhaust becoming more audible and the boiler pressure at last hovering nearer to the 200 mark. Now Bulleid locos were designed for 280, so only having 200 as we did reduced the power in the cylinders a lot. But he also designed a very successful locomotive that would haul any express at speed, whatever the load, and the cylinders started to do their work in earnest with the speed gradually picking up—45 at Surbiton and a good fifty at West Byfleet. We were running late, but at least we were on the move with a clear road, a bit like a caravan being towed along the old A303- a clear road throughout because everyone is stuck behind it!

But the fireman was still looking anxiously at the fire, as parts were not responding and we had the stiff pull up to Farnborough ahead. In went the pricker and a few deft twists helped quite a bit, with well- placed lumps of our choicest that got virtually all the fire well and truly ablaze. We passed the centre, the dead centre, of Brookwood, still holding about 50, but pressure was still not recovering and we clawed our way over the summit at about 40. But the fire was in better shape and once the fireman got the water well up the glass the driver let go a bit. Gradually the speed rose and we managed a good show of around 60 at Fleet and with more coal, mostly dust, we pegged away to get through Basingstoke. Then we had a bit of a pull up towards Litchfield summit- not an issue with an engine in good shape and a reasonable load, but we were still showing only 220 on the gauge and we had well over 500 tons behind us. Over the summit we went at around 40 with the water pretty low on the gauge. The fireman could now replenish the boiler even if it did drop the pressure gauge back, and take a well-earned breather as it was all downhill to Winchester and Eastleigh. Speed picked up quite rapidly and we were soon bowing along in the seventies with the big train pushing us forward.

We braked for the curve at Northam and rolled quietly into Southampton station with the clock showing we were 32 minutes late. The station foreman strolled over, wished us good day and thanked us for coming. I didn't hear what the driver said but his expression suggested an exchange of duties anytime soon. We got the right away and this time boiler pressure was up, water level fine and the blower keeping the fire lively. Our driver opened the regulator and I thought that at long last we would get a run to Bournemouth. But nothing. For what seemed like a minute the driver shut the regulator and wound the gear into reverse. Wound it back and opened up again. Still nothing . He tried to set back but still to no avail. The driver said the brakes must be dragging and shouted to the station foreman to get the examiner. No can do he's on a training course for the new electrics. Driver tried again, this time winding the gear to full reverse and then winding back for all he was worth. This time the engine moved. About a yard and stopped. The driver threw his

cloth at the brake, looked at me, yelled an expletive, and then 'you have a go', which I did. Still nothing. Then all three of us tried together, the driver opening the regulator to full just as the fireman and I wound the crank through mid gear and this time we got movement and the wheels kept turning. Of course we then slipped but mercifully gained just enough momentum to get the train moving smoothly. Now there was something about the drivers expression that suggested he wanted restitution from the engine, and the fireman looked as if he knew what was coming, and started feeding that big firebox in earnest. Once we had hold of the train the regulator went wide

open with the

reverser left where it was. We began to roar and by the time Brockenhurst came in sight we were up into the eighties. We swept through Hinton Admiral and didn't see much of Christchurch, still in the eighties. We rolled into Bournemouth with the clock still showing us only 32 minutes late, so that was something. Our crew jumped down to the platform and left, and I ran over the footbridge and just caught the London. It was a new REP unit with a proper toilet and buffet car. I knew I wouldn't forget my last steam trip, and I will certainly remember seeing the candidate for the 'Black and White Minstrel Show' in the toilet mirror! ... Back in the office later my boss popped his head round the door wearing a wicked smile. 'The running foreman at Nine Elms has gone sick, and would I fancy covering his turn? It would be a good experience before steam finished!

The photo on the previous page shows Bullied unrebuilt West Country Pacific 34105 Swanage passing Vauxhall on 16 May 1964 with the 3 27 pm to Bournemouth. Note the safety valves feathering! Photo John Billard

The RSME stand at the 2014 Engineer Exhibition at Sandown Park. "It was the best stand by far" said members. "However we can't win prizes all the time". See also page 15. Photo Mike Manners.

A HAPPY NEW YEAR - ENGINEERING STYLE by Mike Burke

At the age of fifteen I left school to enter the world of electrical engineering. This wasn't my choice but because I had received a secondary school education and could not only read but do joined up writing my parents decided I should learn a trade. This was to be at the large engineering company of Mather & Platt in Manchester. A company who specialised in the manufacture of electric motors, Dynamos and ginormous generators for power stations and hydro electric projects.

So it was with much trepidation that I started my first day of employment. I was introduced to my foreman who relished in the nickname of 'Syrup Head' because he was almost bald and had let one sideburn grow long enough to stretch across his crown and be wound back and forth to simulate his hair. Then to secure it in place he used some sort of gel that look like syrup. It was hard not to laugh at his misfortune but he was a kindly soul and put me to work in the section known as the Brush Bench' I was provided with a bench, vice, some assorted well used files and put in the care of Charlie on of the senior lads.

The work done here he said was to make the cooling fans for electric motors and generators plus make the brush gear for the commutators of said equipment. He told me I would need to get a long stand and that I would get this at the stores. So I dutifully set off to the stores where on asking for a long stand the man behind the counter said "What length"? Then added "Ahh ,for the brush bench is it? just wait there". I stood shuffling my feet as various employees came and went to collect drills and other equipment. Finally The storeman with a big grin said "There you are, you've had your long stand. You'd better get back before you're missed. Then the penny dropped I'd been had but there was worse to come for on arriving back I couldn't get my tool drawer open and found a large screw had been driven through the bench top, also my lunchtime sandwiches were dangling from a roof truss on a bit of wire.

There was much hilarity amongst the other lads as they watched my embarrassment and discomfort as I faced the foreman. Who with mock anger said "Horseplay is NOT allowed so behave yourself in future" This was said as he manoeuvred a ladder to rescue my lunch. An event that raised a loud cheer from the lads when he succeeded.

Lesson one over I settled down to work as I was shown the correct way to use a file and this included the very necessary instruction not to use one with a loose or missing handle because of the sharp tang. Then a 2ft diameter fan comprising two flat disks with many blades separating them was dumped on

my bench with instructions, using a metal template, to pop mark and drill each fan blade each side then rivet the assembly together. The fans I found were tack (spot) welded together to aid riveting. The rivets were 1/16 diameter and the drill ran at very high speed. It was a very exasperated foreman who finally said “We can’t keep up with the number of drills your breaking. I’m sending you with Charlie to bed in the brushes on the hydro electric generator sitting in Pit 3.

Charlie said that we needed some oversized sheets of emery cloth, goggles and face masks before we went to pit No.3. We walked via the stores and through the factory. This was an eye opener for me for there were giant lathes whirring away, overhead cranes moving above with large castings beneath, arc welders flashing, crucibles bubbling away filled with molten solder etc etc it was just to much to take in at first attempt. Finally at the far end of the factory we found the pits used for assembly and testing of generators. There sitting in pit No.3 was a huge generator about 20ft diameter. And it was our job to bed in the brush gear by putting a large sheet of emery cloth over the copper commutator, lowering the spring loaded carbon brushes onto it, and by grabbing the ends (one on each end) of the emery cloth we could see saw back and forth until the square ends of the carbon brushes had worn down to the radius of the commutator. A couple of large builders boards bolted together was positioned across the pit, which was some 15 or more feet deep, and we had to balance on this with our legs dangling in mid air to work. It was a filthy dusty job and it took several hours to complete. The company thoughtfully provided showers so we were able to go home reasonably clean but not our clothes as the carbon dust penetrated even the smallest gap. Mother was not well pleased.

Another job I was given was to work on the vertical Slotter. This consisted of setting up the rough casting carbon brush holders on the x y table and by using special metal gauges I operated the slotting cutter in the rough holes until the gauges fitted snugly. Extreme care was need as the castings were brass and too deep a cut meant another one for the scrap bin. The cutter tool was square in section and so could cut on any face in the slot. The slotter itself worked on a vertical plunger basis with a crank clonking round and round to give a push pull action to the tool. Each casting had four or six slots to be cleaned to size. However, the rhythmic action of the slotter was quite hypnotic and you had to shake your head regularly to prevent drowsiness. It was a job I was glad to lose when it went to someone on piece work

My next job was tinning the commutator segment after they had had the armature attaching lug affixed. A small crucible was set against one wall with an extractor hood over it. Large blocks of solder were placed in the hot cauldron and quickly slipped beneath the surface of the pot as they melted. A tray of some foul smelling liquid (which I was told was flux, but not to get any on me or my overalls) was alongside. The task was to use special tongs and dip business end of the copper segment in the flux and then dip it in the solder

until the attachment was covered. The segment was then washed in hot clean water and some other chemical to remove flux residue and placed on some racking to cool. These copper segments came in all shapes and sizes according to their design. These when tinned went to the armature bench where a team of qualified engineers assembled each segment, separated by a strip of mica, around an armature and connected them to the windings. These then were tested electrically and then went to a different section where they were assembled inside the appropriate casings. This was not work I was allowed to do but continued to learn as I was taught how to use a horizontal mill to cut the newly cast brush holders to size ready for slotting.

I asked could I learn to use the lathe but was told no as the lads working on them were paid piece work rates and closely protected their earning. However one favourite trick of theirs was to distract you by asking you to look at a workpiece spinning in the lathe whilst one of the other machinist hung a long thin wire to the back of your overalls on which was attached a square of card coated with a large lump of green 'Taprite' this looked like something out of a dogs bottom and caused great hilarity as the victim walked about the workshop and was actively encouraged to visit other sections on some pretence or other.

One unusual highlight occurred on New Years Eve, for lining the factory wall were numerous steel 'Slip rings' of all different sizes. These were used by the commutator gang to encircle the armature commutator whilst the copper segments were inserted and a shellac coating was painted on the wiring connectors. I had noticed that many of them were numbered and assumed it was to do with the various sized motors and generators. How wrong I was for at 4.55pm (we finished at 5pm) a group of men with hammers stood in front of the slip rings and at a nod from the senior man began to strike the rings with the hammers, and to my amazement the most harmonious musical rendering of 'AULD LANG ZYNE' rang out over the factory floor. Many men sang along and at the end a great cheer went up as everyone rushed to the clocking off point. As a point of interest the junior apprentice (me) finished up with an armful of clock cards with instructions to "ring me out" as they rushed off to begin their New Year celebrations.

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FIFTY YEARS AGO Photo by John Billard

This is Battle of Britain Class 34051 "Winston Churchill" passing through Feltham on 30 January 1965 with Churchill's funeral train. The engine was on the verge of withdrawal at the time but was spruced up specially for the occasion and kept in service for a few months more as a mark of respect.

The cortege travelled from St Paul's cathedral down the Thames with wharf side cranes (long gone) being dipped as it passed. The train went from Waterloo to Handborough. The headcode signifies a Churchillian "V" sign, the code normally used for breakdown trains.

There is a personal sequel. I had passed my driving test a few weeks earlier and decided to drive to Feltham (where I worked). On my return, while navigating a roundabout on the Western Avenue the car lost a wheel suddenly, causing an immediate stop. Right behind was an LT route 92 bus which had to reverse to get round me and in the meantime traffic was building up in four directions while I went for help in an adjacent garage. After I was towed off and things started to move again someone said "Look, there's King Haakon", "There's Queen Beatrice". It turned out that I'd held up half the crowned heads of Europe on their way home from St Paul's to Northolt airfield.

A further view of the RSME stand at Sandown Park. Photo Mike Manners

NEXT MONTH
Design your own Great Western Railway locomotive.

RSME CLOTHING

Reading Society of Model Engineers clothing is now available at Cavaliers in Weldale St, Reading, RG1 7BX. Prices are competitive with Polo shirts at £12:50, Sweat Shirts at £15:00, Fleeces at £19:50. All of the above prices are dependant on the quality required. Other items are available, please see their web site cavaliersT-shirts.co.uk or visit their premises in Weldale Street opposite the entrance to Iceland, or contact Tel 0118 9574885.
Cavaliers are open until 17:00

DIARY

January 2015

Sunday	4th	Public Running	13.30 to dusk*
Monday	5th	Committee meeting	19.30
Saturday	10th	Club running	11.00
Monday	12th	Committee meeting	19.30
Monday	19th	Committee meeting	19.30

February 2015

Sunday	1st	Public running	13.30 to dusk*
Saturday	10th	Club running	11.00
Monday	12th	Committee meeting	19.30

*setting up from 11.00

Peter Harrison, secretary, adds

Please note that the club house will be in use by the committee on the additional dates above. The two extra dates are to allow the committee to discuss Club Incorporation and the Raised Track Extension as these topics cannot be given the time required during a normal committee meeting.

Other topics the committee is discussing:

Film nights
Future development of the club house.
Young Engineers/Modellers section.

We would like to thank the gardening department for the tree planting that took place just before Christmas. These trees were planted as a reminder of all those members that have passed away. It is hoped that they will flower in thee spring and bring some colour to the site.

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

The deadline for the February PROSPECTUS is
18 January. This is the final date.

Contributions from all members are greatly welcomed
They may be submitted in hard or soft copy to the editor.

John Billard Old Station House Twyford Reading RG10 9NA
01189 340381
john.billard@virgin.net