NEWSLETTER March 2019

FORTHCOMING EVENTS

March

Workshop Morning: Tuesday 19th ~ 10am - 12 noon.

April

Club Meeting: Wednesday 3rd April: – **Tony Simons will talk about a vintage *Gardner* engine and a *Tom Senior* Milling Machine.**

Workshop Morning: Tuesday 16th April 10-12 noon.

May

Club Meeting: Wednesday 1st May - **Arrangements for Doncaster Model Engineering Exhibition including Stewarding.**

Doncaster Show:

Wednesday 8th May: Load vehicles for show.

Thursday 9th May: Doncaster set-up day (arrive 10.00 am).

Friday, Saturday, Sunday 10/11/12th – Doncaster Show.

Workshop Morning: Tuesday May 21st 10-12 noon.

CLUB MEETING: Wednesday 6th March.

- **Introduction.**

The Chairman Colin Bainbridge asked if there were any visitors. The one visitor Mike Smith said he wasn't a model engineer, but was interested in engineering and was there to hear about PEEMS modelling activities.

Whilst the club meeting was about organising the models for *The Doncaster Show* in May, Mike Sayers and John Heeley had brought along models for discussion, so it was decided to combine the two themes*, Doncaster Show* with a mini *'Bring and Brag'*. Ted Fletcher also described a way to convert a milling machine wired for 415 volts ~ 3 phase to a 240 volts single phase, without having to buy an expensive replacement coil.

The subject of *'Bring and Brag'* was discussed in the last committee meeting, and it was decided that it might be a good idea to raise the profile of members' work at club meetings, especially in 2020 (as 2019 was already booked up with club events). Possibly the club will play down the external speakers and have more of an accent on aspects of model engineering, with regard to skills, the sharing of techniques etc. This is really the essence of the club. Maybe we have invited too many speakers in the past to the detriment of discussing what members have been doing in their own sheds and workshops ~ *food for thought*.

- **Membership Subscriptions**

There are still a few members who have not paid their subscriptions. Colin stressed the importance of sticking to the renewal date, because it is currently sliding. The renewal date is actually December. Currently the end of February is the deadline. In future if members don't resubscribe by the end of February, they will cease to be members. This may sound harsh, but if someone is not a signed in member, or the signed in guest of a member they will not be covered by the club's insurance, either at the club's meetings or at events held by the club. It is also important that people sign in either as a member, or as a guest of a member, because the club needs to keep a log of the number of people using the hall in the event of unforeseen circumstances.

- **Visit To Ivan Shaw's Workshop.**

Ivan is currently building a personal aircraft at Hutton Le Hole. Our March visit has been delayed until April 16th (Tuesday), or 17th (Wednesday), or 18th (Thursday). The visit will be an "open morning" event with refreshments, and maps and times will be given out to interested parties at the next club meeting when the preferred date is decided.

- **Local Club Visits.**

The club is trying to arrange a local trip to the Scarborough area in April/May, to a couple of engineering companies, and possibly to the new workshops at the Technical College.
At the moment the College has not been welcoming to parties of people outside of open days. Currently the college is promoting the workshops to people who might use them. This is a 'trip for the future'.

- *Unison Ltd (Tube Bending Machines).*

There is a possible visit to *Unison Ltd* in Eastfield, Scarborough. They make machinery for pipe bending of all sizes and it will be the construction of these machines that will be of interest.
On the same visit the club could probably be able to visit a small engineering company on the Eastfield industrial estate which has CNC facilities.

- *UPM Raflatac Ltd. (Global supplier of pressure sensitive label materials.)*

The club was hoping to go to the *Raflatac* factory on the same site at Eastfield, although this is proving more difficult than first thought. Colin is trying arrange visits either side of lunch time so that members could visit a fish and chip restaurant between visits.

- *'Flower Of May' Organ Collection*

As a 'stop gap' another visit to the *'Flower of May' Organ Collection* could be arranged. The visit to the collection could be combined with a visit to Eastfield, with lunch at the *'Flower Of May'.*

- *North Sea Winches Ltd.* (Eastfield).

Brian Stephenson mentioned that we could visit *North Sea Winches Ltd*. (NSW). This company had been founded by a PEEMS member, and PEEMS had visited it a number of years ago. For visitors there are 'Health and Safety issues where the correct clothing, hard hats and boots need to be worn.

Note: As of writing the Newsletter, Ted Fletcher has said that Brian was contacting *NSW* with a view for a visit in June and Tony was writing to *Unison* to try and arrange a visit on the same day.

- **Club Visits To Other Areas.**

There have been suggestions for 'Days Out' types of visits.

Two places have been put forward:

- Manchester Science Museum.
- Bolton Steam Museum.

The club has visited **The Manchester Science Museum** before, but as there was so much see across a broad range of subjects, another visit has been suggested.

Alternatively, the **Bolton Steam Museum** is the home of *The Northern Mill Engine Trust*, which has been in existence since the 1950s/60s. The trust was set up to rescue and restore steam plant that was used in the textile industry. The collection runs to twenty-five individual machines. Both the Manchester and Bolton museums do provide guided tours for interested clubs such as our own. The Bolton museum is obviously steam orientated, so may be a minority interest.

A show of hands showed Manchester (9) and Bolton (9) indicating an equal interest in both. The museums are free entry.

- The Armley Mills Museum. Peter Bramley mentioned *The Armley Mills Museum* in Leeds that may be of interest. It used to be the biggest woollen mill in the world. Journey time will be about one hour.

Colin suggested the trips take place in school term times, either before the schools break up, or after they go back in September. September may be a more attractive option as the club has a lot of activity between now and summer. Journey times to Bolton and Manchester will be same: two to two and a half hours. If there are enough people for these trips, the coach can be hired again.

- **School Events.**

Alne School (York). The club has been approached by Alne school near York, for an event similar to that put on by Amotherby school last year. As yet there is no information, other than to let the school know that July would be the best time for the club. Mike Sayers has a list of the science subjects they are teaching the children, so the club can go through that list to see which of those subjects can be demonstrated in an interesting way. The next committee meeting will go through that list to see what projects could be done.

Welburn Hall School. The club is due a meeting with Welburn Hall School, to discuss our activity with them in June. We already know that our proposed date of 25th June is acceptable. After Easter, the club will discuss the details with the school.

- **The Doncaster Show.**

David Proctor has now e-mailed Doncaster Show entry forms. Details of the models to be entered at the show need to be specified on the forms. Hopefully, those with e-mails had already received the forms. David would like the forms with the details of any models attached, returned.
For those without e-mails, paper copy forms were available on the evening.
David had received a 'Form B' to complete from Gavin Rex, the organiser of the Doncaster Show. Gavin has given PEEMS a little extra time, but the club meeting in April will be deadline. The sooner the entry forms are returned the better.

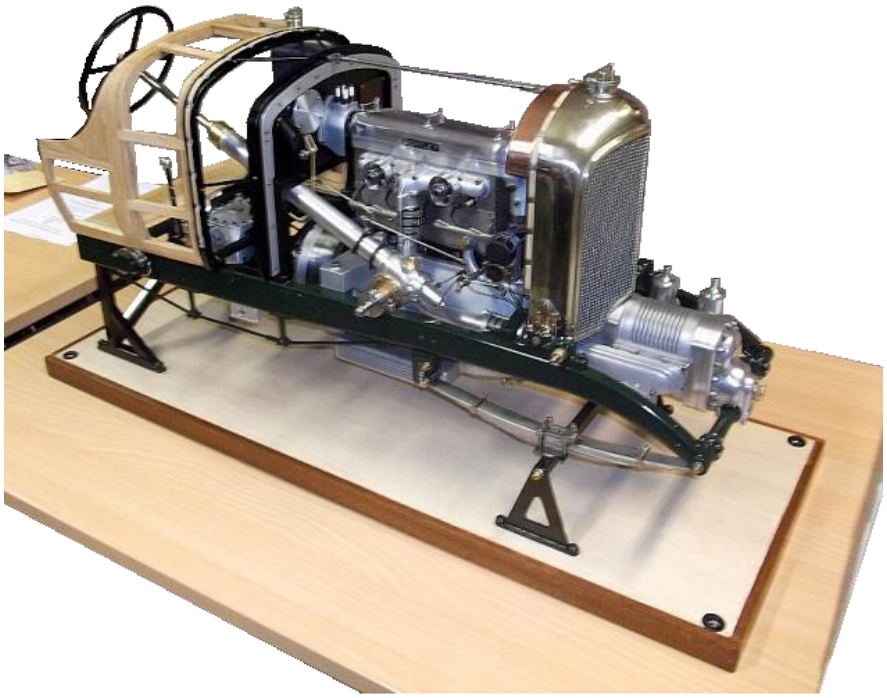
At the May club meeting the logistics of taking the models to the show will be discussed, as well as stewarding. Mike Sayers will have a special area at the PEEMS stand for his own Bentley models, including the scale Bentley model on the display at the club meeting.

- **Mini "Bring and Brag"**

i) Mike Sayers' Model 4½ litre *'Blower'* Bentley Engine.

Mike wanted to have a few words about the Doncaster exhibition, before discussing his model. Brian Stephenson was unable to attend this year, but has a list of models that could populate the stand. It then behoves club members to take these models to the show, care for them at the show, and then bring them back.

It was pointed out there will be about twenty models that would need transportation to and from the show on behalf of non-attending members, plus the models of the attending members, and the display stand itself. Transportation is therefore crucial and people with vans were urged to volunteer.



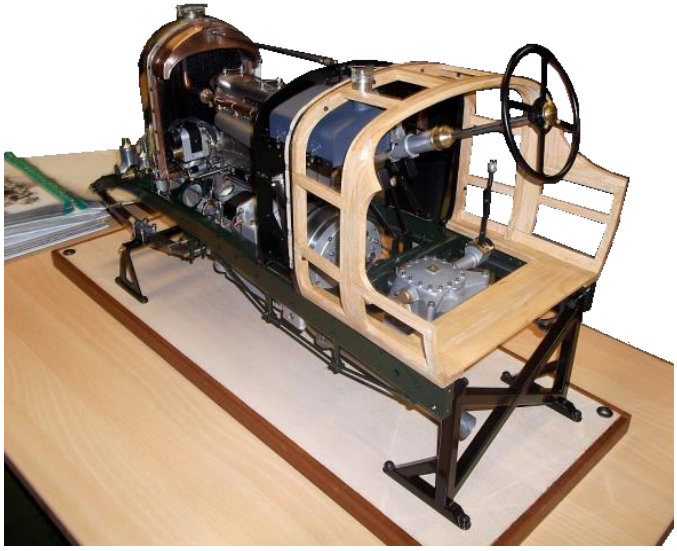
So why is Mike talking his *Bentley* models to Doncaster this year? 2019 is the 100th anniversary of the *Bentley* marque which started in 1919, and he started the construction process of two *Bentley* engines in 1999.
This means that this is the twentieth year that he has been making *Bentley* models. Mike thought it would be good to have a "one-man centenary exhibition" of *Bentley* engines and it would be the twentieth anniversary of the start of the odyssey to build the two models. The idea is to commandeer three tables at the centre of the PEEMS stand. On display will be both the 3 litre and the 4½ litre *'Blower'* models with a few spare parts and also behind that an array of the jigs and fixtures he had to manufacture in order to construct the models.

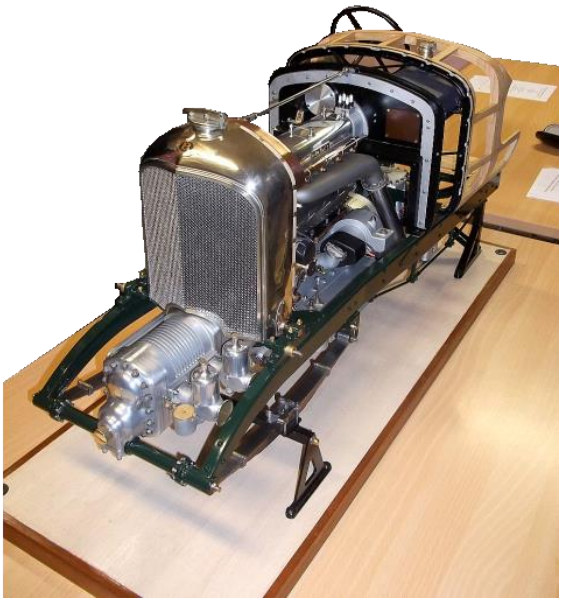
Mike has been offered a stand on his own, but that has happened before and it is a very lonely experience. That is why he wanted to support the PEEMS stand. Before Mike started the models, he had built a full-size *Bentley*, and when driving it, was so impressed with it he started building the model 3 litre engine. This was more difficult than building the full-size version! Mike got to the end of the 3 litre engine when he thought about building the 4½ litre '*Blower'* version. This version of the engine almost financially crippled *Bentley* and 1931 a receiver was appointed. The 3 litre and the 4½ litre were the first and last 4 cylinder engines produced at Cricklewood.

Mike started the *'Blower'* model towards the end of the 3 litre model build. He then spent a couple of years experimenting, trying to build the supercharger. In the book accompanying the model, there is a pictorial history of how Mike made it. When the 4½ litre engine is compared with the 3 litre engine, the centre bore centres are the same but the cylinders are much bigger and the crankshaft is bigger and heavier.

The sump on the 4½ litre engine is a huge casting. It has two oil pumps in it as well as the oil filter, pressure relief valve and a level measuring device. The sump is a project in itself.

Mike found he couldn't turn the engine over with the small starter motor in the scaled space, and that is when the construction of the gearbox started a couple of years ago. The gearbox is actually the self-starter for the engine. Inside the gearbox is a 20 volt motor, a 30:1 epicyclic reduction gear, and a *Torrington* one-way clutch, which allows the engine to start, and then it disconnects itself. The idea is that reverse gear is selected which activates the starter motor.

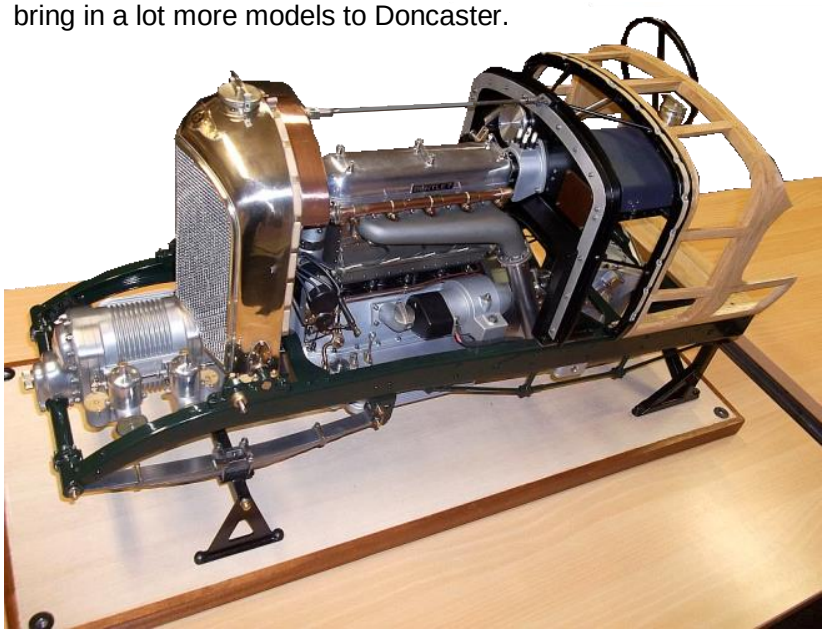




Once the gearbox was finished, Mike decided to make the controls as in the original car, and started with the throttle pedal. This works the carburettors, and it needs an advance/retard and a hand throttle. That meant a steering column and a box were also required. The clutch pedal was then manufactured, to make the clutch work. There are no brakes, but for authenticity a brake pedal was required. It's got a gear lever, but needs a hand brake, which is the next project.

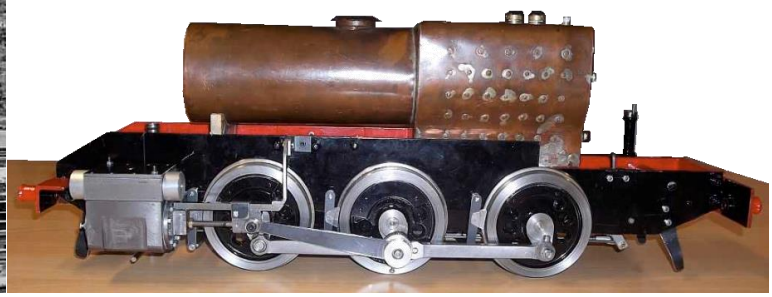
This project has led Mike on from one thing to another. He didn't plan to do all this, it's just how it turned out. The wooden body was a real challenge, as wood is not really his medium. The model contains authentic materials, such as ash for the body and aluminium and cast iron as in the originals. Nearly all the nuts and bolts have had to be specially made. The S.U. carburettors are specially built for the model. There is no choke in them. There is just a jet tube with a valve underneath. There are no movable jets like a normal S.U. carburettor. That means there has to be a priming pump to inject fuel.

Mike is plucking up courage to put the 4½ litre '*Blower'* into a competition at Doncaster. He has requested that the organisers allow it to be on the PEEMS stand and still be 'in competition'. At the London *'Model Engineer'* exhibition, there are various awards such as gold and silver medals, and a '*Duke of Edinburgh'* trophy etc. These will now be presented at Doncaster. The *'Model Engineer'* medals and trophies at Doncaster will be separate to the normal trophies there and at Harrogate. The *'Model Engineer'* competition will be run by Mike Law. That should bring in a lot more models to Doncaster.



A question was asked about castings and machinings on the model.
The sump was machined from a block.
The only successful castings were the carburettor bodies. A steel die was made to cast those and the dies will be on show at Doncaster.

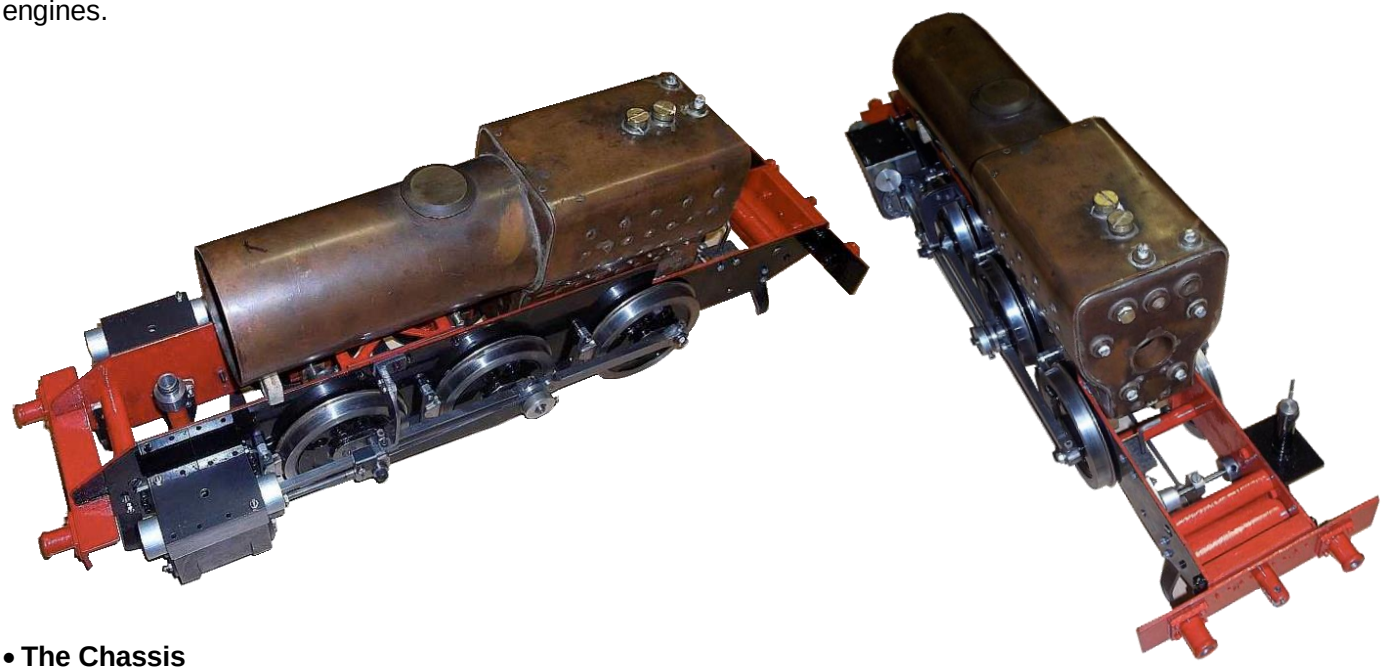
ii) John Heeley's 3½" Gauge Locomotive, Based On A Great Western Railway '1500' Pannier Tank Engine.



John had brought in a model consisting of a boiler mounted on a 0-6-0 chassis. It is based on (but is not a scale model of) a Great Western Railway (GWR) 1500 pannier tank steam locomotive. Only ten were built. Despite being a GWR design, all ten (nos. 1500–1509) were built by the Western Region of British Railways in 1949. A "*Speedy"* in 5" gauge is also based on the GWR 1500, but John's locomotive will be 3½" gauge.

- **The Boiler**

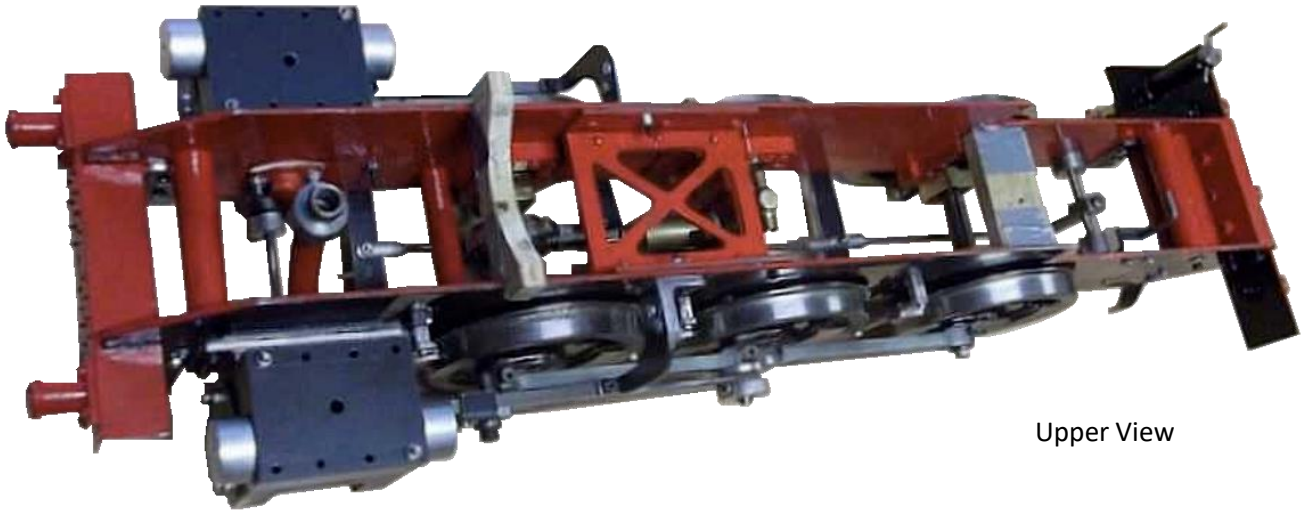
The boiler had been made by a member of the Barnsley Society around 1985. The boiler has been at the club with different members for a number of years, and John had it on a 4-4-0 'Midland Compound' chassis for at least ten years, before he sold it. He recently bought it back. The boiler is on a 'Southern Federation' ticket, and it was the last test ticket the Barnsley Society ever issued. There will be no more as the Barnsley Society has disbanded. Most Barnsley members have gone to Wakefield. Wakefield have a track which is currently being rebuilt in *Thornes Park*. That has contributed to John wanting something to run on the track, something he has missed for the last twenty years.
Looking at the locomotive you will see cast iron cylinders at the front which haven't been lightened, and also weight at the back. The locomotive in the end will be quite heavy, which will be good for 'tractive effort' (see below).
The boiler is quite capable of pulling six passengers all afternoon. When John ran locomotives on a regular basis in the 1980/90s, he used to run for two to four hours with relief drivers, pulling passengers constantly with 3½" gauge engines.



- **The Chassis**

Because it is a "freelance" model it is "over-engineered", but John wants something that is tough and can run. He wants it to look like a scale model (of something that didn't exist) but also a serious working engine. There are no drawings.
Previously he has made seven other running locomotives, this is number eight. The last one, a 7¼" narrow gauge was built just twenty years ago, so John is on a "relearning journey" but it is coming back quite quickly to him.
The design is based on a GWR 1500, because that had the characteristics required for a 0-6-0 chassis. It will include some attractive side tanks, and no bogie wheels which have a tendency to derail. John wanted six wheels on the track because of the "tractive effort". This is based on the weight that can be applied through the wheels onto the rail (John had regretted building a previous four-wheel narrow-gauge loco which didn't have enough "tractive effort").

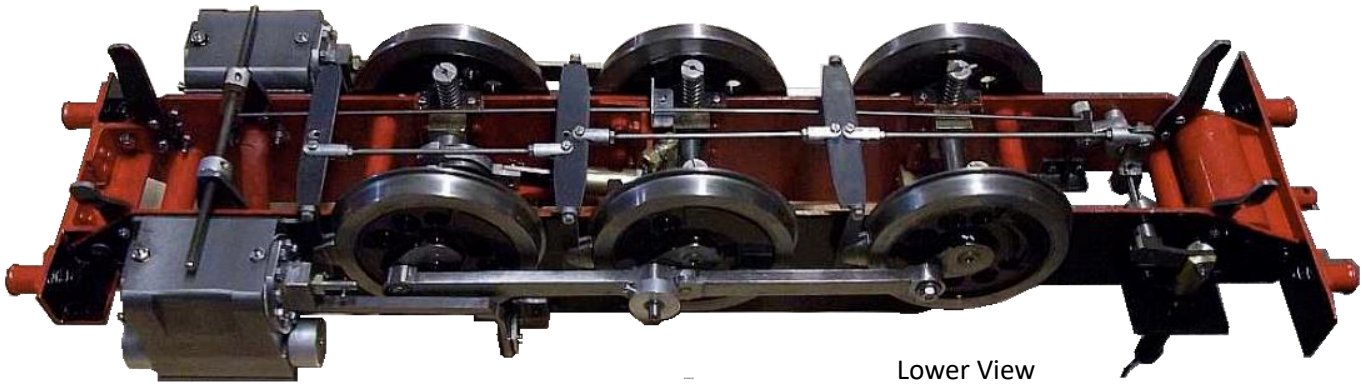
In the 1990s, John made a 3½" gauge North Eastern Railways 'K1', and on its first running day, made more money than it cost to build. It should be noted that John makes locomotives out of recycled materials.
From experience, John has learnt that it is worth going a little over size on the wheel profiles, particularly with 3½" gauge rail which tends to be in a poor condition wherever you go. Very few people run on the gauge and it never gets heavy wear. It is also worth using a slightly larger wheel profile. The wheels are fractionally wider than they should be, and the flanges fractionally deeper.
John has had the chassis on the track at Huddersfield, and it showed no problems with 3½" gauge at all. He has pushed it as hard as he could to let it freewheel around the tightest curve and it "sticks to the track". This makes him confident with his wheel profiling.



Upper View

- **The Wheels**

The wheels are slices from a redundant hydraulic ram. The hydraulic ram cylinder was 5" diameter EN8 chromed steel, and had been sliced into 20mm thick sections. John turned them to 4" on the tread plus the flanges. There is no intention of having any castings on the locomotive.



Lower View

- **The Cylinders**

The cylinders are machined from a cast iron brick, the size of a house brick. John had used half the brick for the 7¼" gauge locomotive he had built 20 years ago. He has managed to manufacture the cylinders on the 0-6-0 from the remaining block, using his radial arm bandsaw. The metal is beautiful to work with. John doesn't know what the brick was supposed to be for. The cylinder blocks are therefore cast iron with 1⅛" cylinders, 1¾" stroke, and steel pistons with two cast iron rings.
The rings are of a 2mm rectangular section on a 1⅛" diameter. John pushed the gap out 2½ mm which seems to be the best free gap for getting them "over the top line". If there is a lower wall pressure, they can't be put on without breaking. They are tight though, but once the rod is on they do move well. With a bit of running in, they should be alright. They are tighter than John would like them to be, but the only way to reduce the free air gap is to use a smaller section ring. A 2 mm rectangular section is what John wanted. He has taken the pistons out, and there is a nice uniform grey on the outside of the rings, and it looks like they fitted the parts nicely. The rod is a "slave" rod., partly to get the pistons moving, and partly to make sure the centres are correct. John didn't want to go to the trouble of machining a connecting rod up (or a pair of connecting rods) and finding he hadn't got the measurements correct. The centre on the left-hand side turned out to be 5¼ ". It might be the same size on the other side or it might be ½ mm different. The other side will have a "slave" rod fitted, and the connecting rod made to fit.
It's all a bit experimental.

- **The Project**

This is one of the projects John likes to "*grow on the bench*", which is a statement he makes quite often. When it comes to something like a locomotive, there is so much published information out there, so he can get out all the drawings and decide what to do.
The cylinders are based on L.B.S.C's *"Princess Marina",* but none of the measurements are the same. Having the concepts and drawings "gets you into the game". It is the same for axle boxes and horn blocks. For 3½" gauge there is almost a standard for axle boxes and horn blocks. These standards can be applied to any locomotive.
John did do a general arrangement drawing to begin with, but when he tried to "drop the boiler in", he didn't have sufficient space between the wheel centres. He discovered this on paper before he made anything. In order to get the boiler in, he needed an extra ⅜" at the back. To get the boiler in, the chassis no longer has the same scaled wheel base as the GWR 1500. At least the boiler fits now.
John is succeeding in doing 2 hours/day on the model, one hour on, one and a half hours off, and an hour on again. That work load seems to be sustainable, and he hopes to finish the locomotive in a year. He hopes to have it finished and painted on Christmas day.
The target cost is £500, (the boiler cost £220). The 1980s boiler has always cost £220 as it was sold on since the 1980s. There have been no holdups or problems.
John wants to end up with a very reliable locomotive that can be run, because Wakefield do a lot of passenger hauling. They have 5" and 7¼" track on the ground which is a ¼ mile loop. They go around twice, as it is a double loop which crosses over, so the total journey is ½ mile. The Barnsley track will be in the middle of that, and will be extended. The trains are run on behalf of the *Wakefield Mayor's Charity Appeal* which is money given out to various worthy causes around the Wakefield area, so it's worth aiming for. John intends to run this loco and run it a lot. That is why he wants iron piston rings. He knows that if he puts in silicone piston rings, they will last 10 hours in steam. They will be changed at ten hours because they will fail in twelve. John has it all written down, and has it marked in his prerun schedule. He knows from experience how long components last. For example, the 'O' ring of the axle pump in the middle is ten hours rated. After that time, it starts to leak. As these facts are known, John has had very few locos fail in service.

Questions and Answers

Q Is the boiler superheated?

John The boiler has a single superheater tube down the middle, which will be brought over the top of the firebox, with a plate under it to stop flames hitting it directly. I like detachable boilers. The boiler can be removed after detaching two steam pipes, and the water feed pipes. Then there are two screws at the front and two at the back (on the expansion joints) to be removed before the boiler can be physically lifted off. Having a fully detachable boiler makes life a lot easier for servicing. Theoretically the boiler can be lifted on and off in full steam, although I have never done this. Of course, the tanks (4 bolts) and the cab (4 bolts) need to be fully detachable, but I reckon I can get the boiler off in 10 minutes.

Q Are you dedicated to the 'British Outline' as far as the aesthetics are concerned?

John I like 'British Outline' locomotives and have based this one on the GWR '1500'. They call it "*Speedy*" in 5" gauge, but it wasn't speedy, these were heavy shunting engines. They were used for marshalling coaches and for putting passenger trains together. Ten '1500s' were built. Once the engine has its side pannier tanks on, it will look the part. The actual '1500' had piston valves, but I didn't want to use piston valves again. I put piston valves in "*Evening Star*" years ago. The life of piston valves in model locomotives is limited. They had to be replaced every year at the end of the season. They also had to go in so tightly. They had be 'drifted in' with vegetable oil as it was more slippery than mineral oil. Even though they started out tight they were wearing out quickly. I won't use piston valves unless rings can be put on them and then there is the problem, of pistons running over ports.
On this locomotive there will be conventional *outside admission slide valves*, but I haven't yet decided if they are going to be cast iron or stainless steel. There will be a *Walschaerts* valve gear on the outside (no parts are yet made).
It will be a left-hand drive cab, a bit like a '*Riddles*' British standard. That is to do with ergonomics. If you are right handed it is easier to drive a left hand drive cab because your fingers are on the left hand side of your hand, and if you are going to drive for an hour and a half, you want the ergonomics to be right. The fire door may be sliding as I found advantages with that. There will also be a screw reverser, because I like the "Vernier effect" of playing with the valve gear. It needs to be wound gently rather than using notches. The brakes are really just a parking brake, especially for gradients in steam bays at club tracks. It is theoretically possible to stop a locomotive on its brakes, but if you have a screw reverser, you can put it slightly into reverse to stop it like a traction engine.

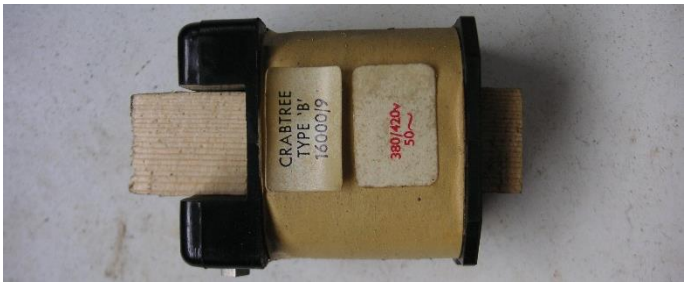
Q What valve gear are you using?

John A standard *Walschaerts* valve gear. The gear is built in layers.
The first part is to get the coupling rods on, and get the wheel quartering correct [wheel quartering is the setting of the wheels of a two or four cylinder locomotive to ensure the crank pins on one side are at 90° to those on the other side to ensure self-starting]. At that stage I tried it on the track.

Part two is to get the piston and connecting rods right.
Part three is to get the valve gear on. The first part of the valve gear is the combination lever at the front. In the *Walschaerts* gear the vertical combination lever at the front should just "crack" the valve in both directions, when the valve gear is in neutral. I want this valve gear to run on air, and prefer to build up the gear with moving metal parts rather than with a drawing (which doesn't move).
The first valve gear I built was for "*Evening Star*", and to start with I did it to the published drawing. I found that by using the drawing, with all the errors in the build, the gear didn't fit. That meant I had to make my own valve gear for "*Evening Star*", and I have done that ever since. It is not daunting if you know exactly what each component does.
The loco is around ⅜" too wide and the wheels are too wide, but once finished, the out of scale dimensions will not be noticed.

iii) Ted Fletcher ~ Milling Machine Motor Contactor Operating Coil Conversion.

Ted has altered contactors and other such things for a friend and thought it might be useful for the members to know about. Here he explains how he converted a milling machine wired for 415 Volts ~ 3 phase to run from a 240 Volts single phase supply:



If you are carrying out this conversion, please be extremely careful when testing the contactor.

A friend of a friend bought a milling machine wired for 415 Volts ~ 3phase. He intends to change the motor and run the machine from a 240 Volts single phase supply.

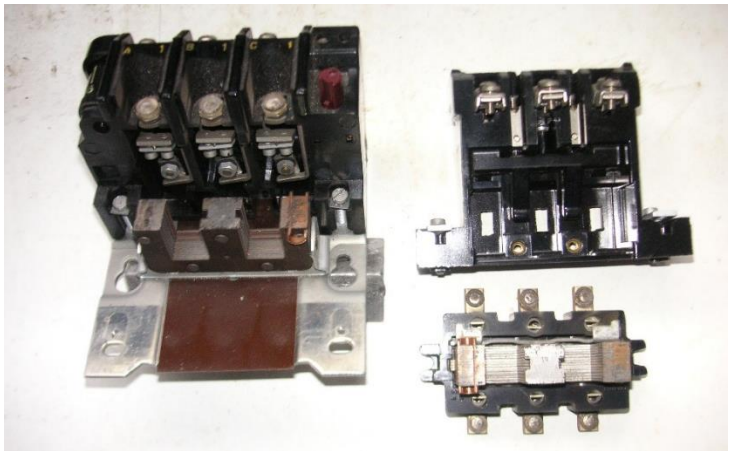
The contactors made by *Crabtree* have operating coils made for 415 V. Replacement coils for these old contactors are expensive, if available at all, and to replace the old contactors with new is even more expensive.

If you connect 240 V to a contactor/coil made for 415 V it will at best just buzz. 240 ÷ 415 is ratio of original coil resistance required to pull in the contactor in a similar manner to when it left the factory.

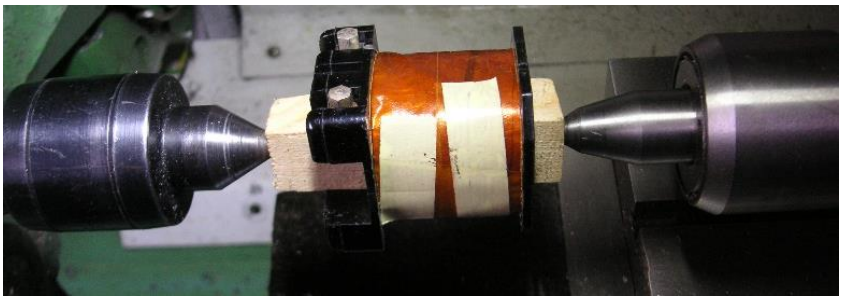
Please note: some coils manufacturers impregnated their coils with tough resin, which dries rock hard, and it's not possible to unwind the fine wire necessary to carry out this conversion.

If this is the first time you have dismantled anything such as this, then have a note book, pencil and camera ready for use, make notes and take pictures as you dismantle the starter. The pictures and notes will be useful when you later reassemble the contactor.

I carefully took the contactor apart, putting each piece removed into an old ice cream tub.
Once apart, I measured the coil resistance at 1244Ω, so about 42% of the turns had to be removed. Operating coils are accurately made at the factory, no doubt by an automatic machine.
However, as far as Model Engineers are concerned, a few Ohms either way won't make a lot of difference. If the resistance is too high, the starter won't energise (pull in), it will just buzz.



Next, I shaped a piece of wood with a very slight taper so it was a tight fit in the coil former. With the electric power to the lathe DISCONNECTED, the wood was mounted between TWO running centres on the lathe. I had already unsoldered the outer most end of the wire, which had been attached to one of the coil terminals. The wire is very thin, so be very careful pulling it off. If you break the wire it will be difficult to locate the end once again.



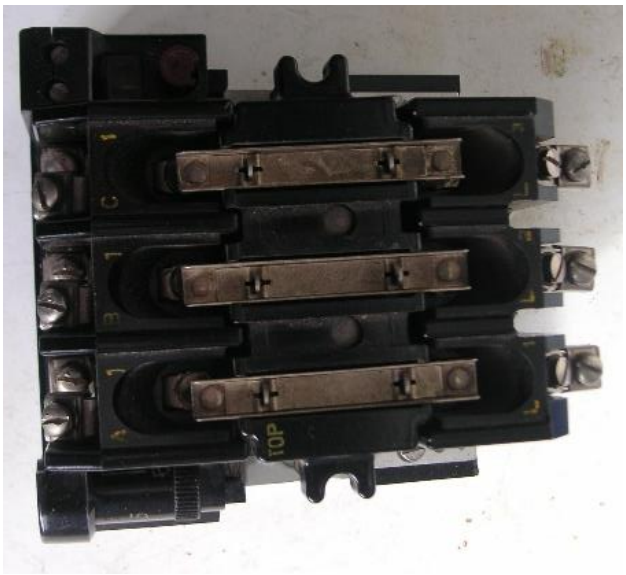
I have done this type of thing before on 415 V motor starters, and some coils need a bit of help. If the varnish has set hard, a trip in the oven helps things along, softening the resin. Here be careful, as some varnishes give off an unpleasant odour, which might contaminate cooked food in the future. Not too much heat though, as it may deform the plastic coil former which will only fit one way round into the pole piece laminations.

I then slowly pulled away the wire to be removed. After a few minutes I stopped, broke away the wire already removed from the coil and very carefully scraped away the varnish on the coil wire end, so that an electrical connection could be made.

Using a multimeter on the ohms range, I checked the coil resistance. It was 1080 Ω, so yet more turns needed to be removed. It is important to check the coil resistance frequently, as it would be tedious and trying to put turns back on, once off. As I have previously said, replacement coils are not readily available. I didn't want to spoil a good contactor by being careless. Eventually 720 Ω appeared on the meter display.

I then broke away the wire, again scraped off the varnish, tinned the wire end and soldered it to the vacant terminal.

The contactor was then reassembled.



Now reassembled, the contactor was connected to the 240 V mains for a test. In the interest of safety, I always give the coil a monitored heat soak test. As I had other things to do in the workshop I left the contactor connected to the electric supply for 2 hours.

I have a Laser temperature meter and used it to check the temperature after reassembling the contactor. It was 9˚C and after two hours it was 21˚C. Out of interest, I took the starter assembly apart once again so that I could feel the coil and it was hardly warm to the touch.

• **PEEMS Annual Dinner At *Mickle Hill* 15th March 2019**

The PEEMS annual dinner at *Mickle Hill* was very well attended by PEEMS members, their wives and partners.

The food and the facilities were excellent. Once again, Jim Everett ran an exciting raffle to complete the evening.

PEEMS would like to thank the management of *Mickle Hill* for accommodating PEEMS and the catering staff for their wonderful food and efficient service. Over one hundred dishes were served on the evening!

Special thanks go to George Gibbs for suggesting the venue, and to George and John Powell for their generous arrangements in facilitating a memorable evening.

• **The following may be of interest:**

Dear Sir, Madam,

Firstly I would like to introduce myself, I am David Leahy of Owl Castings. We are a small workshop based in south east Kent who specialize in the bespoke casting of brass, bronze and iron. Our interest and specialty are the generation of castings for live steam projects using our own pattern making facility and our own foundry. We have made many castings for our clients to date and some of these can be seen at our web-site, www.owlcastings.co.uk

If you have any questions or would like to see more of our work please do not hesitate to contact us on this email or through our web-site. We are happy to quote over email for most projects and we can work from either rough sketches with dimensions or professional drawings. Our casting facility can cope with most small to large live steam projects and we have up to 30kg melting capacity for most metals.

Owl Casting will be delighted to help you achieve your cast metal requirements.

Best regards,
David Leahy and Sam Baynham
Owl Casting.

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