NEWSLETTER May 2025

Hello Everyone, I was sad when I had to report George had died following a short spell in hospital.

He was an enthusiastic and a very generous PEEMS member and attended committee meetings whenever he could. He was good company whether at a show or a curry night, and I enjoyed hearing snippets of his long and interesting life. He was a professional engineer and also very skilled on the tools and clever with his hands.
His funeral will be at Woodlands Crematorium, Scarborough on Thursday June 5th at 11 am.

And now for some good news!

David Proctor has been recognised for his hard work as Club Chairman and commitment and devotion as Club Secretary, by being made a PEEMS Honorary Life Member. I announced this at the May meeting at the Hungate Centre, because we were not sure whether he would be able to attend further meetings before he relocated. Anyway, in what has become a bit of a tradition, we will be having a curry night in Pickering to say “cheerio”, and you are all welcome to attend. The actual day is yet to be confirmed but I will let you know when. Wives and partners are cordially invited to join us.

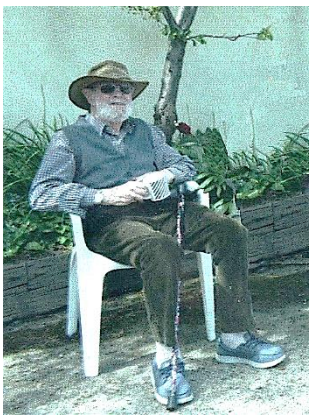
Although we are managing, with me taking on the Club Secretary's tasks, we are still looking for a dedicated Secretary to ensure the smooth running of PEEMS; come on, someone must want to do it !!

I don't tend to go on holiday much now, but my annual trip away is when I attend a P&O Pensioners reunion lunch in Southampton. I was there recently, and met a lad I last saw 47 years ago, when we sailed the seven seas together. We had lots to talk about, one of his jobs after he left sea included testing pressure vessels in the Palaces. There was a lot of brain cells woken up by old stories, but I needed a quiet day to recover when I got back!

I stumbled on a YouTube clip the other day, maybe it's not everyone's cup of tea but it was called “How the world's finest shotguns are made”. It is well worth a look to appreciate the work involved, and it is British! Have a look and let me know what you think. Have you any suggestions for entertaining clips?

Hope to see you on June 4th when Brian Mulvana returns to talk about WW2 Radar in North Yorkshire.

Kind regards, Jonathan.



- **Forthcoming Events.**

- **Wednesday June 4th** — **World War 2 Radar in North Yorkshire ~ A talk by Brian Mulvana.**
- **Saturday June 7th** — **Bradford Challenge (Car share for visit only)**
- **Tuesday June 19th** — **Workshop Morning.**
- **Wednesday July 2nd** — **Summer *‘Bring and Brag’* and Social.**
- **Tuesday July 15th** — **Workshop Morning.**
- **Wednesday August 6th** — **The History and Operation Of The *Blacker* Power Hammer. A Talk by Chris Bramley.**
- **Tuesday August 19th** — **Workshop Morning.**

Club Evening 7th May 2025 ~ Spring 'Bring and Brag'

Jonathan welcomed everyone to the meeting including a guest, David.

There was an interesting assortment of members' projects and tools on display.

Before the '*Bring and Brag'* started, Jonathan had some announcements.

- **Pickering Vintage Rally.**

As mentioned previously in last month's newsletter, PEEMS was unable to attend the Pickering Vintage Rally due to security issues. Jonathan has been in contact with Richard Ashworth who organises the rally and he said that next year, the big lockable building will be available with overnight security. Jonathan said that he will stay in contact with Richard to see whether PEEMS can get a display in there next year. Jonathan will contact Richard early next year to find out what's happening.

- **PEEMS 2025 Excursion.**

The Committee has discussed a Club excursion for 2025. *Royal Armouries Museum* Leeds was suggested, with a canal boat trip included. A few years ago, a member had been on a canal trip after they visited the museum, however, Jonathan looked up Leeds canal trips on the internet, but couldn't find any.

The other idea is the '*Land Of Iron'* Museum at Skinningrove (near Loftus). If there is in the order of 12 people, a tour can be arranged, providing we book in advance. With the guide the admission is £10 PER PERSON. The '*Land Of Iron'* museum seemed to have more appeal for the members present. Jonathan said he would investigate further. The date of the visit is to be decided, but is likely to be in September

The Website is at this link: https://landofiron.org.uk/ *Click on link*.

- **Garden Railway.**

Jonathan received an e-mail from a lady in Malton who has now managed to dispose of her garden railway with help from contacts at PEEMS. She is very happy to reclaim her garden!

- **Taylor-Hobson Engraving Machine and Small Centre Lathe with Capstan.**

Kevin Hutchinson from Ebberston (who used to be a PEEMS member), has kindly offered PEEMS a *Taylor-Hobson* engraving machine, which is extremely generous of him. We still do not know if we will accept his offer.

He also has a small centre lathe with a capstan attachment. We do not know the name of the manufacturer yet, but Kevin would like to give it to PEEMS or to a member who would make use of it. If someone is seeking a lathe of this type, please contact Jonathan.

- **David Proctor.**

Everyone will now be aware that David, our former Club Secretary, is now moving house to 'The South'. David would like to arrange a 'Curry Night leaving do', probably around the second week in June.

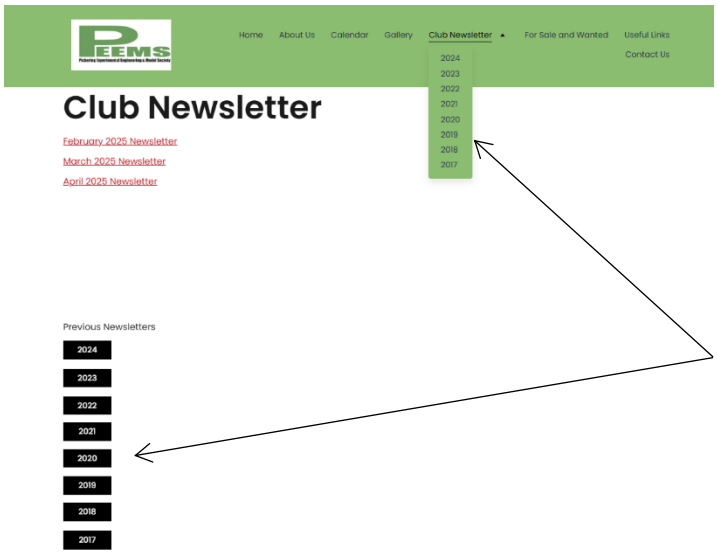
David has been a PEEMS member since 2017, and has done a lot for the Club, being not only Chairman, but also Secretary.

The Club would like to thank David for his valuable contribution over the years, and officially make him an *Honorary Life Member.*

- **PEEMS Website Update.**

The PEEMS website now provides access to all the monthly newsletters since 2017.

This is now the appearance of the Club Newsletter page:



Previous Newsletters, for each year, can be accessed either by clicking on the Club Newsletter top-down menu or by clicking on the folders below.

- **An Apparatus For Investigating The Response Of The "*Pickering Flyer*" Hand Held Remote Controller. David Proctor.**

- **Introduction.**

Last June, PEEMS took the "*Pickering Flyer*" model car to the *Bradford Challenge*, and managed to make the fastest times on their track circuit.

David was operating the car by pulling on the trigger of the hand-held remote-control transmitter, trying to make it go and stop. He found that when the trigger was pulled there was a delay, then all of a sudden the signal was there, followed by saturation with maximum signal achieved very quickly. This meant that there was no real control ('on' and 'off' effectively being very close together).

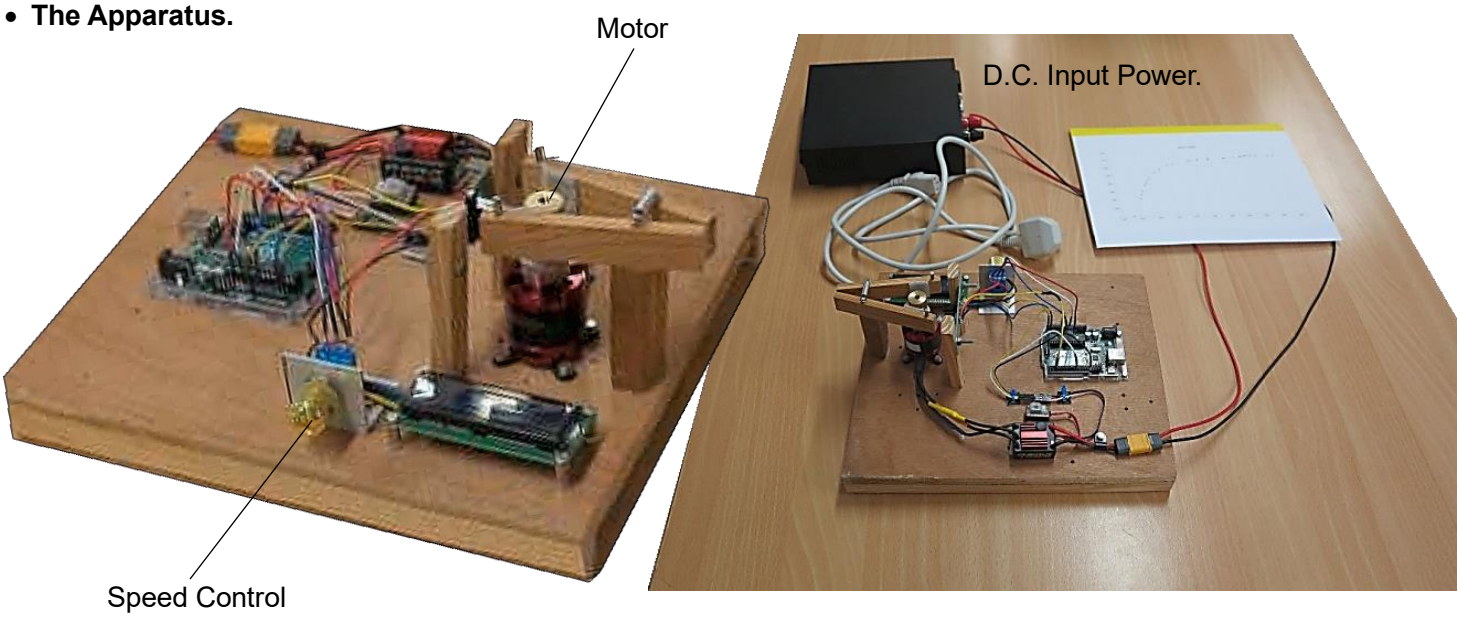
The control wheel was having to be 'feathered' to get a reduction in speed as the "*Flyer*" was going through the tunnel, which included a tight curve. On previous runs, the car had 'come a cropper'.

David started thinking about how the speed controller on the motors was working and why the delay was happening.

- **A Bit Of Background.**

The "*Pickering Flyer*" was running on radio control, and the radio signal transmits a pulse width modulated signal from the receiver to the servo. The pulse widths are 20 milliseconds apart nominally, and there is a millisecond of 'steady on" and at the end of that millisecond, there is a millisecond of control. So, that's between one and two milliseconds and then it goes off. After a further eighteen milliseconds it starts again. What should happen, in theory, is that at the one millisecond point it should be 'off' and at the two millisecond point it should be 'full on'.

- **The Apparatus.**



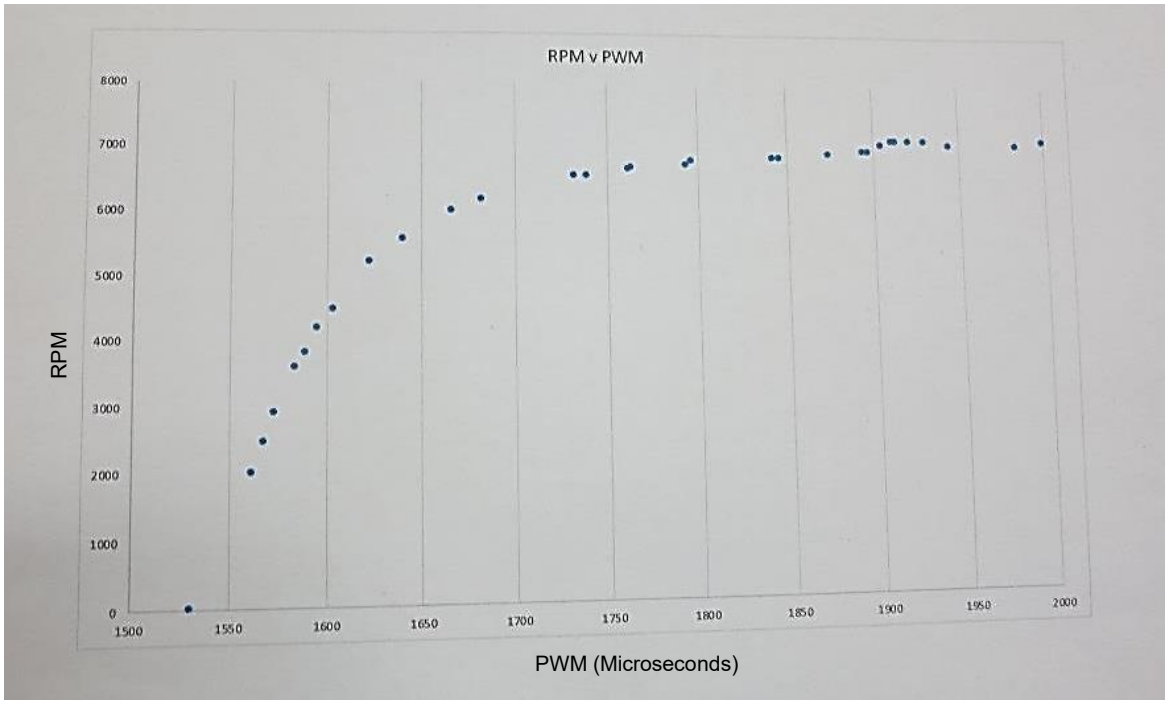
David has built the monitoring apparatus here, which is a test bed. He can generate a pulse, with a modulated signal to go to the speed controller, and then he can measure the speed of the motor.

The motor is as it was on the "*Pickering Flyer*", being a brushless D.C. motor. It might look like an A.C. motor, 3-phase etc., but that is as close as it gets. It is switching the input D.C. onto each of the sets of windings, as it would do if it was a traditional brushed motor with a commutator with carbon brushes and copper segments.

David plotted the motor revs/min (rpm) against the pulse width microseconds (pwm). The results echoed what was seen on the "*Flyer*". The correlation between pwm and rpm is non-linear. More to the point, the data points don't start until almost 1600 microseconds (see graph next page), and at 1700 microseconds, the signal is saturated.

This means that all the control (zero through to maximum), is happening all at once in just 10 – 15% of the allowable range. The question is: "Is this how it's meant to be?", or is something wrong with the system? The apparatus has a different controller to what the "*Flyer*" had, but has the same response. Why is that?

David then demonstrated the apparatus.



Q: Is that a potentiometer on the speed controller?

David: Yes it is. The potentiometer is driving the *Arduino* which is mapping the potentiometer value between 0 and 5 volts; and that is what is driving the pulse width generator.

David (winding up the speed controller)**:** The pulse width is now at 1591 microseconds (1.591 milliseconds)**,** and the motor is at 3800 rpm. As the motor is cranked up, at 1600 microseconds pulse width the motor is at 6000 rpm, and after 1700 microsecond pulse width the signal is saturated.

Q: Is it a linear potentiometer?

David: Yes it is.

Q: Have you tried a logarithmic potentiometer? That may even out the non linearity.

David: I shouldn't have to. In fact, the radio receiver is linear and that is what I am investigating, the output from that. But that's an interesting idea.

- **The Measurement Goals For The Apparatus.**

The setup of the apparatus is quite crude, but what David was trying to do was related to the Optical Torsion Meter demonstrated at the Club in 2023 and described in the August newsletter of that year. David never satisfactorily correlated the D.C. input power, which drove the motor to the measured power from the Torsion Meter. Trying to measure the power on David's apparatus is very difficult because you get two phases on and one off. On the oscilloscope it's all over the place.

With this apparatus, David wanted to run the motor under 'no load', adjust it to a certain speed, note the pulse width required to get to that speed; put the motor 'on load' with a spring, the speed will then drop and then crank up the pulse width until the speed gets back to where it was. The difference in pulse width is then noted because there should be some correlation between the pulse width and the power absorbed at the other end. Ultimately this is what the apparatus will measure.

Running up the apparatus again: Motor at 4860 rpm with 1614 microseconds pulse width.

Putting the motor under load with a spring gives: Motor at 4860 rpm with 1643 microsections pulse width.

There is almost 30 microsections change in pulse width between motor 'off load' to motor 'on load'. If the results of Power vs Pulse Width were tabulated, David could use that to check the Torsion Meter to see if it's on the sane scale.

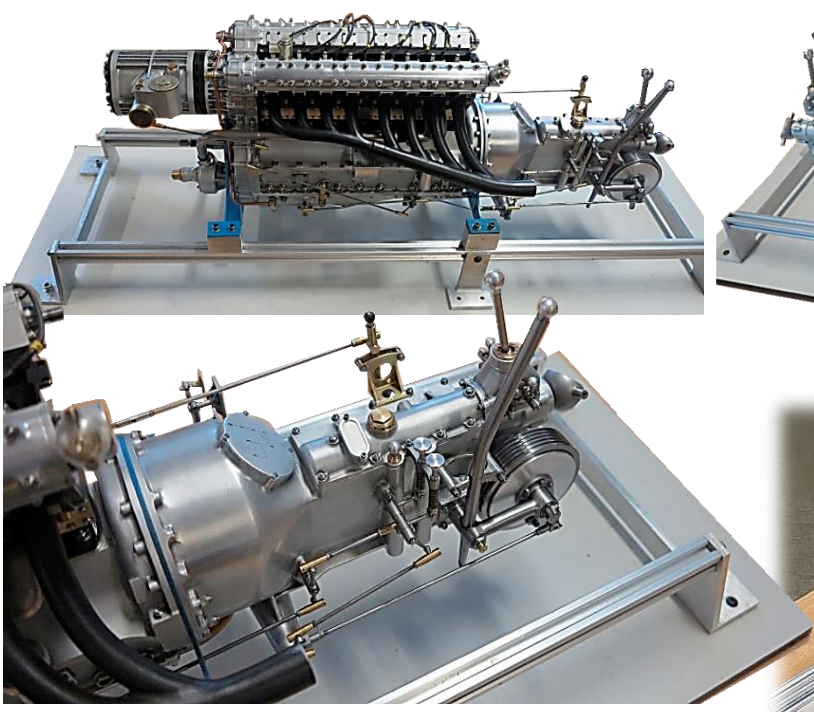
Q: Is this true for model aircraft controllers as well?

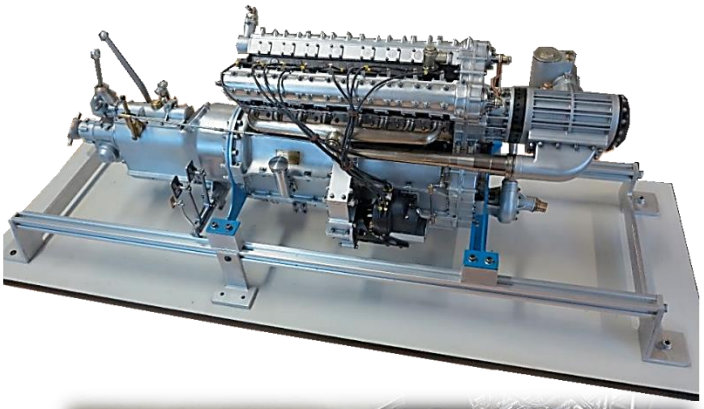
David: Yes it's the same controller. The "Pickering Flyer" was difficult to control. It shot out of the gate, but it was difficult to slacken off the speed as it came around the tunnel.

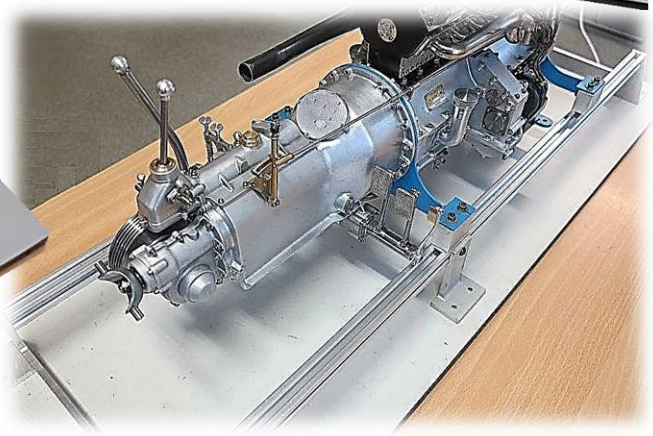
- **Mike Sayers ~ *Delage* Model Engine Phase 3.**

- **Introduction.**

PEEMS has been following all the construction stages of Mike's Grand Prix *Delage* engine model since 2017. Finally, at this 2025 Spring 'Bring and Brag' the completed engine and gearbox were on display.



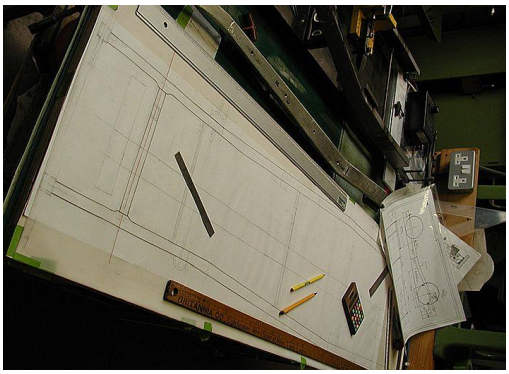


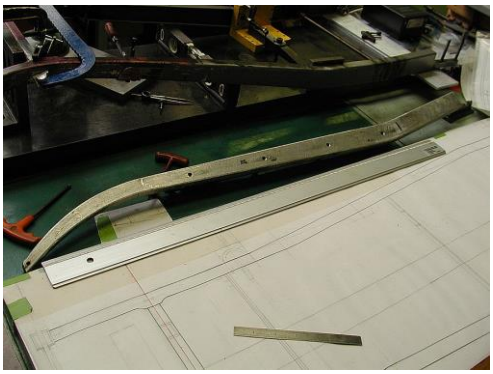


Mike was all set to start another complete project with a full-size car, but that ran into problems. He did however, realise that he wanted to display the *Delage* model in a better way than hither-to, putting it on a better mount, and making it look more professional. He then realised that what he really wanted to do was make a chassis like he did with his two ⅓rd scale Bentley engine models. But first he had to make sure he had enough information to make the chassis.

[Mike just realised that he had started the model just a month prior to David joining PEEMS, and he has completed it when David was leaving!].

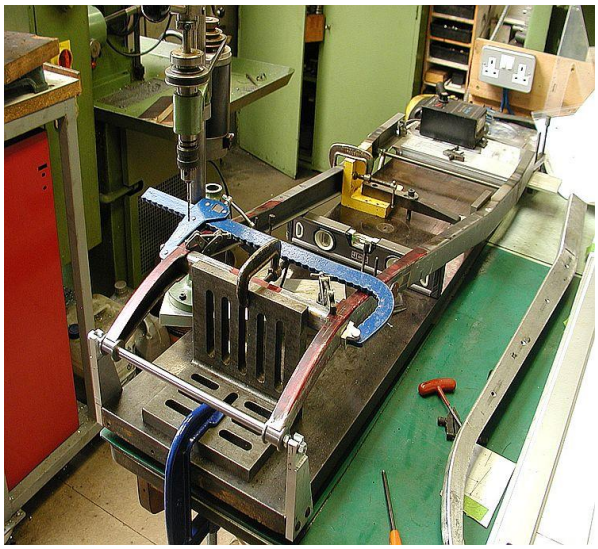
- **The Chassis.**





The first thing that was done was to produce a drawing of the chassis to the correct scale. Mike did have enough information to produce the profile of the chassis, and the position of all the cross-members. The profile of the chassis can be seen at the back of the drawing board. This was sawn out of ¾" aluminium plate, reducing the depth of the shape by twice the thickness of the 2mm steel sheet to be wrapped around it.

On the next page can be seen a metre length of mild steel channel. It's 42mm deep, 20mm wide and 2mm thick, and has been folded on a press brake. It's rather like lightweight blacksmithing to bend it, form it and taper it to the shape seen in the photo. Making the opposite hand one the same shape as the first one, was a bit awkward.

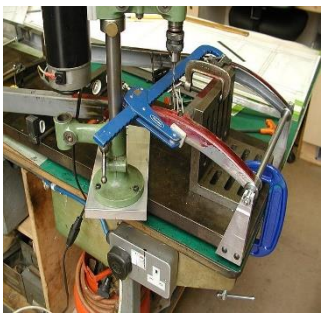


Q: What radius do you have on the corners of the channel**?**

Mike: 2.75mm. The channels went 'out of line' when pressed along the full length and they are slightly shorter than I really need, but at least the corner radii are constant. There is another problem in that the width of the chassis varies along its length, as can be seen in the second photo above. It's narrower at the front and gets wider towards the back. This is as far as I have got with it.

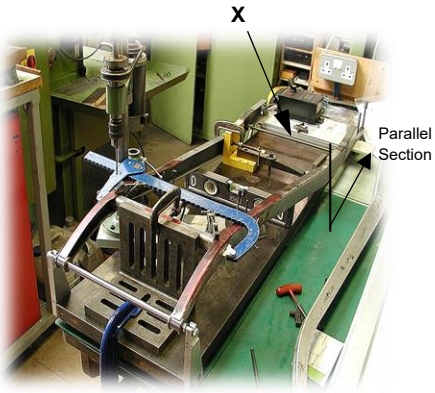
Here Mike has set up a *George Thomas* drilling machine, so he can start to drill the rivet holes for riveting in the chassis cross members.

Mike asked Jonathan if he could use the big piece of cast iron that was in the workshop, and it's made an excellent jig for doing this work. It's allowed Mike to set up a datum at the front end for the cross members, so he can set the ride height at 65mm from the base.



- **Maintaining The Chassis Profile during Forming.**

To get the chassis profiles right, and to maintain the corner radii of the channels from front to back, Mike cut about ¼" inside the fold line, cut the centre out, folded the whole thing over the aluminium profile and clamped both together. A filling piece conforming to the formed shape of the cutout was made and brazed in. You can just make out the braze lines (indicated below) in a certain light. The channels are one piece from the front to the parallel section at the back, which is brazed in.



Q: How long is the chassis?

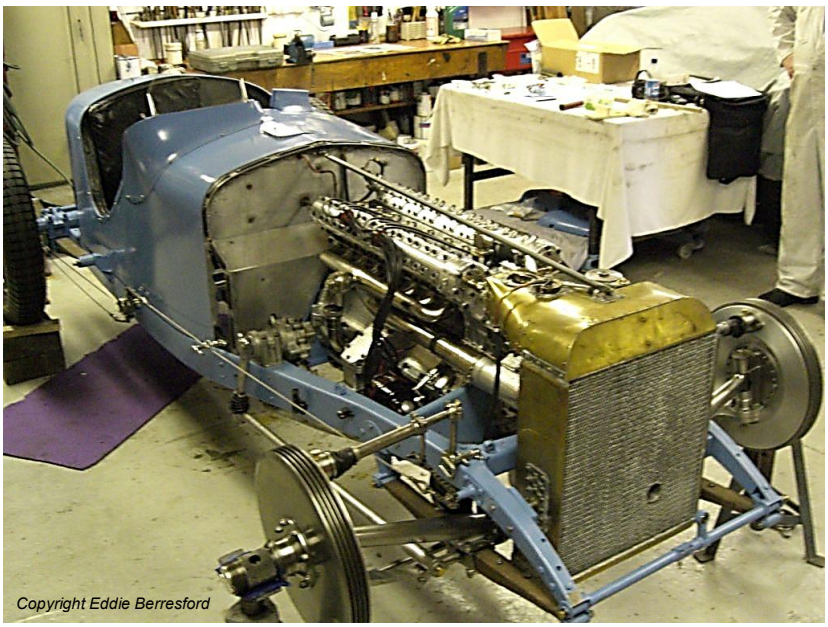
Mike: The chassis is 1.3 metres long. The gearbox ends just at the rod at point X on the photo above, so there is not much behind. There is a small parallel section of chassis behind, each side, and then the chassis tapers towards the back.

Q: At the front end of the chassis where there is the tight radius on the chassis profile, did you have to stretch and shrink the web of the channel?

Mike: At the front, close to the braze line, the web was shrunk and stretched over a very small area. You're stretching at the bottom and shrinking at the top, but you can hardly see it. On the profile you can 'knock out' the slight wrinkle in the channel, but it doesn't show much at all.

- **Some Aspects Of The Full-Size Car That Need To Be Considered In The Model.**

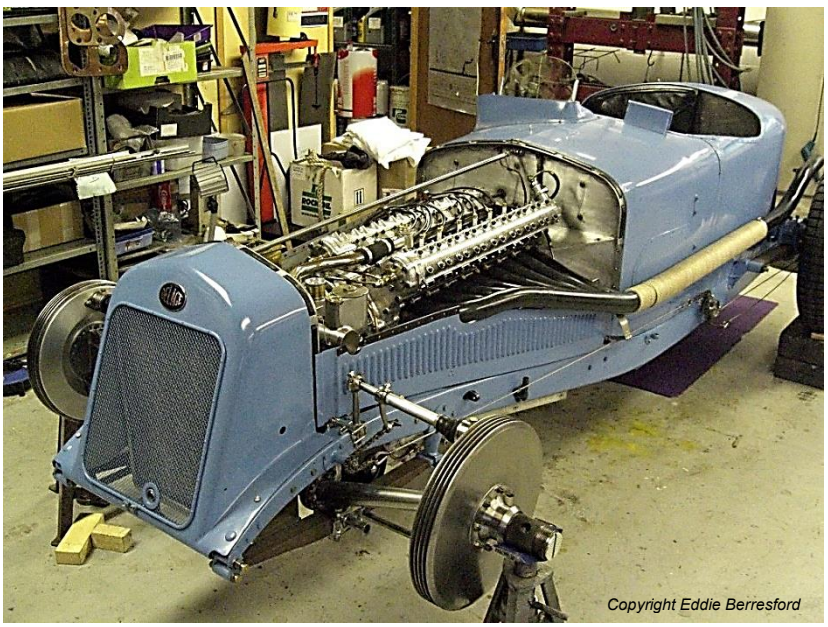
These are some photos taken of the Number 1 *Delage* Grand Prix car, taken during its restoration in the UK, before it went to the *Revs Institute* in Naples Florida. Here, the chassis has the engine installed. A very large radiator is mounted in front of the engine. When he test ran the model engine, Mike realised why the radiator had to be so large, as even the model overheated quickly. Of course, the model was stationary. This means that he has a radiator to build.



One problem with the *Delage* is that the engine is offset from the centreline of the car. It is a 100mm offset on the full-size car and 40mm in the model. The offset is to the left hand-side of the car to give more room for the driver on the right-hand side.

Therefore, there is an offset transmission line to the back of the car. The back axle is offset as are the half shafts and differentials. That in itself causes a bit of a problem, because if the engine is installed offset from the centre, it will look wrong aesthetically when displayed installed in just a bare chassis.

It forces Mike to make all the components that fill the extra space on the driver's side to make it look right. Look at the position of the starting handle access on the radiator, and you can see the offset. You can also see the extra space for the steering box on the right-hand side of the car.



Mike also wants to make a front cowl which covers the radiator and this will involve some panel beating.

This will also provide somewhere to mount a name plate. Mike is sick of explaining to people the name of the car the engine is from.

He also wants to make the scuttle (bulkhead) at the back of the engine bay, and the frame of the body, but not the panel work, because he doesn't want to cover the engine.

You can see the brake drums, the axle, and all the brake bits and pieces. They are beautifully made on their own with polished steel to tool room excellence.

The full-size *Revs Institute* car is the only unmodified Grand Prix *Delage,* and is complete with the original cable brakes. It has the servo on the gearbox which is included in the model. It is such a significant car which won the first British Grand Prix. Mike has already made the drawings for the front axle, brakes and splined hubs.

Mike said that he wouldn't have been able to build this model without full access to the car at the Brooklands Museum. The museum allowed him to remove and measure components.

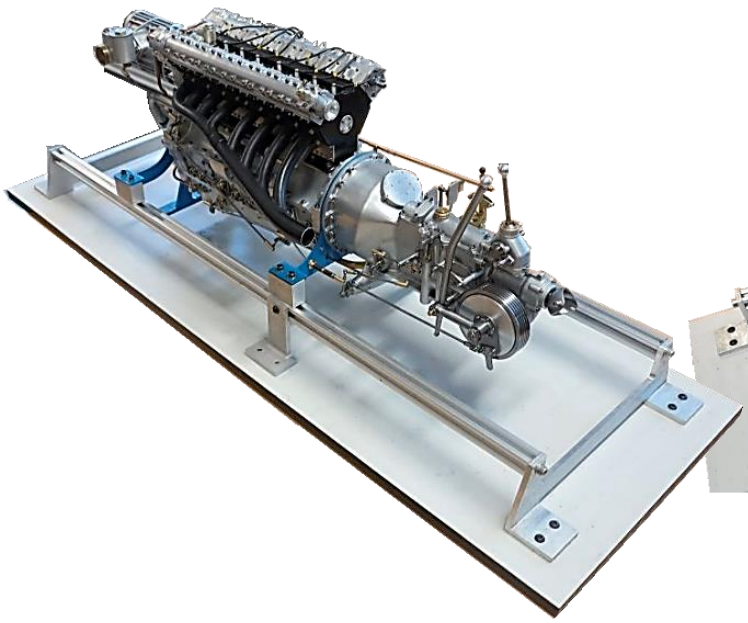
Q: In the actual car, did the fact that the weight of the engine and gearbox were offset from the centreline make a lot of difference to the handling?

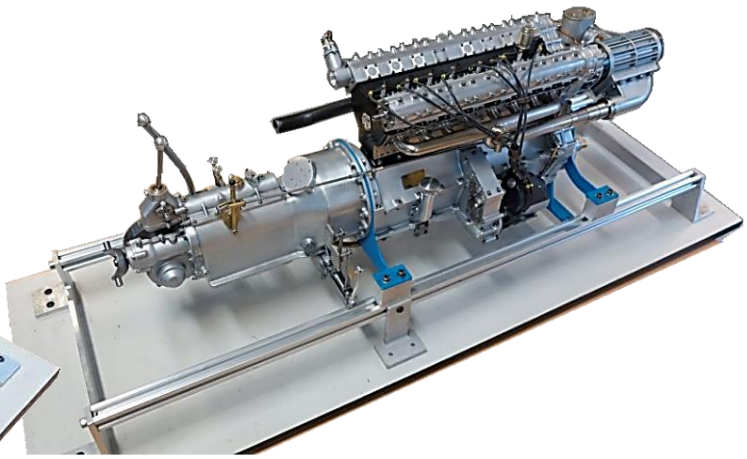
Mike: I never got to drive it fast enough at Brooklands to find out, but I don't think so. The car is very narrow, and there is barely room for a passenger seat, which would have to be perched on the top of the oil tank. Having said that, the Delage was very successful against single seat racing cars with centreline engines.

Q: Would the offset engine affect the handling, depending on whether it was a right hand or left-hand circuit?

Mike: Maybe. In those days, it was a different style of driving to current cars, which have wide 'sticky' tyres. The *Delages* were in a constant state of drift because of the skinny tyres. The cars tended to slide, rather than roll. The suspension was very stiff. If it was on a soft suspension, and 'sticky' tyres, you could induce roll.

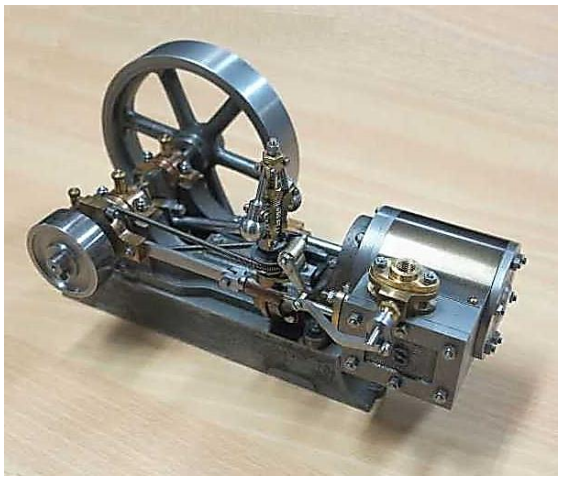
Mike said he still felt excited about building these 'bits and pieces' and see them come together.

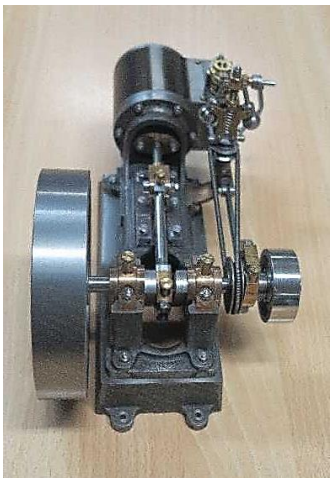


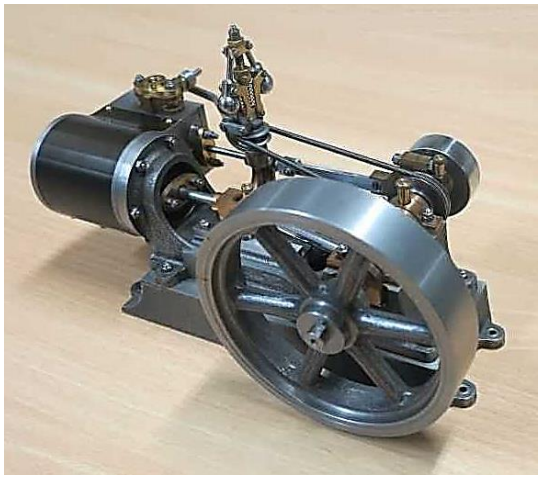


PEEMS thanks Mike for kindly allowing his photos and those of Eddie Berresford to be reproduced in this article. These photos should not be reproduced without the permission from the owners.

- **Richard Radcliffe ~ Stationary *Stuart Turner* Model Engine.**







Richard said that there was nothing special about this particular *Stuart Turner* engine. He had bought the castings about twenty five years ago, and built the engine during Covid Lockdown.

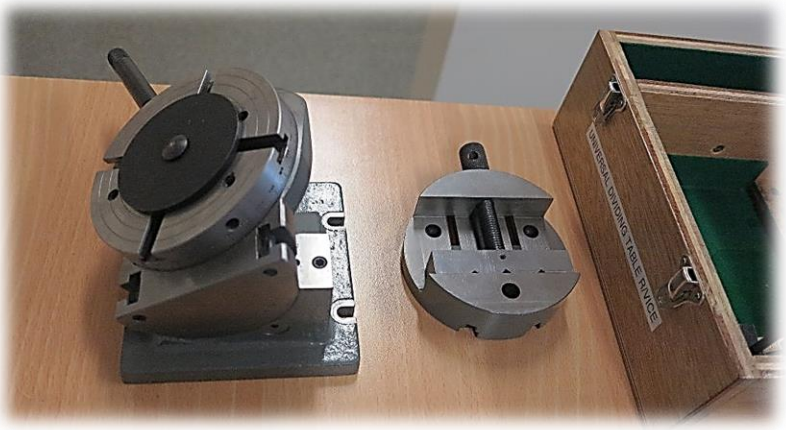
A lot of people present had heard his talk about grinding at the previous Club meeting. The crank on the model is completely ground, as are the slipper plates. The rest of the engine is standard. The elliptical unions (as seen above) were milled with a pantograph. Rather than filing them and making a mess, Richard copied a standard ellipse from a programme like "Word", enlarged it 5x, put it on the engraving machine, and milled out the unions.

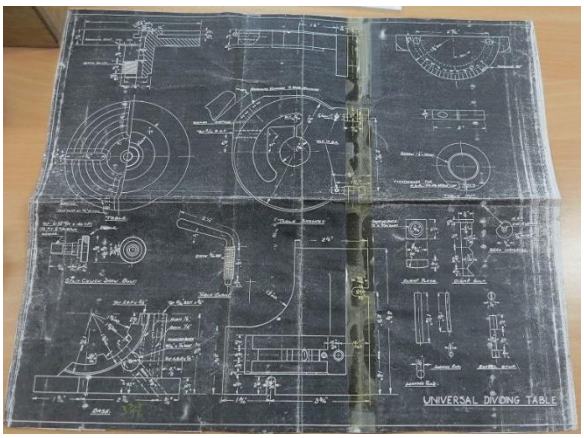
- **Paul Gammon's Pivoting Universal Engraving/Dividing Table With *Chronos* Vice.**

Paul displayed his Universal Engraving/Dividing Table along with his *Chronos* vice which can be attached to the table. Someone at S.M.E.E. (Society Of Model and Experimental Engineers), did the original patterns, and Paul has had the castings for about twenty five years. The table can pivot.

The machining of the 'T' groove to allow the table to pivot was quite tricky. The 'T' groove allows the table to lock on whilst pivoting. The groove isn't quite a full half diameter. The 'T' groove was cut with a 'T' slot cutter. Before cutting the groove, a cutter was put in deeper than the slot.

Paul also brought in his *Chronos* vice which fits on the table. A *Pultra* collet goes down the middle of the table, so that Paul can hold small components in it. The disk on the table supports 4-jaw chucks, independent and self centring.





This tool is very useful. Paul now leaves it on the mill, and uses the handle to turn it around, similar to a *George Thomas.* It was an interesting job machining it up, and engraving it. Paul set up a *George Thomas* staking tool.

There is a company at Dartford who do castings for industry, but they won't do 'one offs'. Before the Second World War, Tommy Bartlett of SMEE fame would go into the company and get castings for his lift company. He got to know the family and was able to get special castings. Paul got his castings through SMEE.

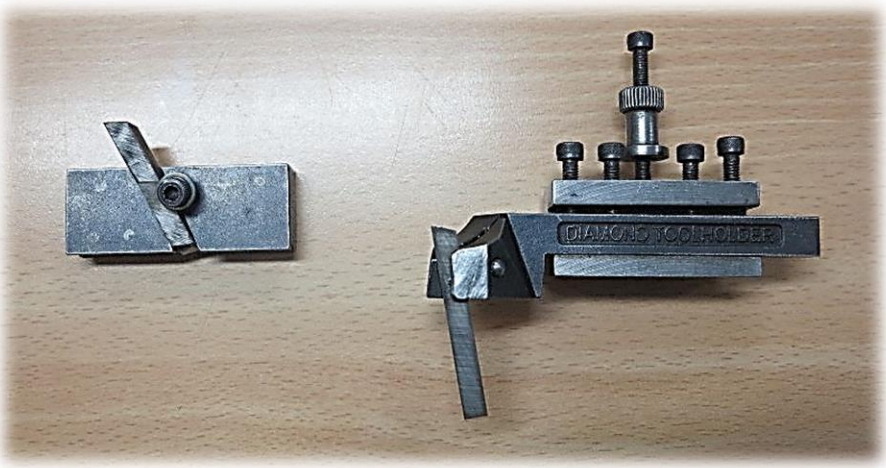
Paul has had the castings in his garden for three years stress relieving and ageing, instead of going through a heat treatment process. This is similar to some of the F1 racing cars that used standard blocks from the company's staff saloon cars. These were run in for 6 months before being removed from the staff cars and fitted to the racing cars. That got the casting sorted; the hot-cold-hot-cold cycling stress relieved the block after the casting process….. or so Paul was told.

- **Rob Davey ~ A Cutting Tool For The Lathe.**

The tool is not quite vertical, it is at an angle in two vertical planes. To grind the tool, you only need to grind the top edge. The height of the tool is adjustable. The tool is *Crobalt* a Co-Cr (Cobalt-Chrome) alloy. Rob sent to Australia for it, and the holder, because they are not available in the UK. The company does however, supply worldwide from Australia. The link is: www.eccentricengineering.com.au *[Press on link for access].*

Bits of the tool can be cut off and brazed onto mild steel so that can be used as a tool that doesn't lose its edge. It can also be ground so the tool can be used for screw cutting.

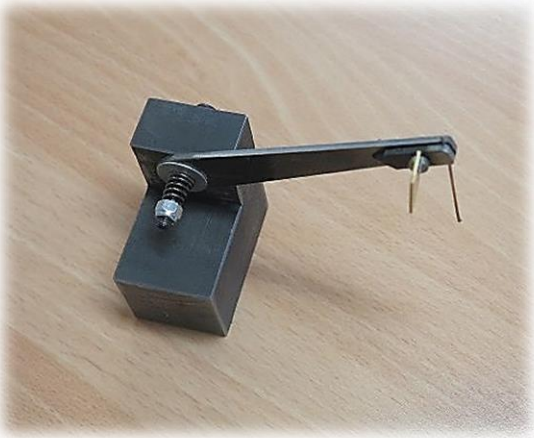
Alongside of the tool is shown the jig which is held against the tool when it is ground, in order to get the right angle of cut.



- **Tony Leeming ~ Silver Soldering Aid (Tony's 'Nodding Donkey')**

Tony said that he invented this very simple tool to help him locate application points during very intense work such as silver soldering where his hands tend to be unsteady. This tool helps Tony precisely locate the area of the joint he wants to solder.

The tool point which holds a piece of silver solder is lowered to where the solder joint is required. It is then raised while the joint is heated. Once hot, the arm is again lowered for the solder to touch the joint and, despite dithering hands, the solder melts where it is required and makes the joint, probably saving about 80% of the solder used without the device.



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