NEWSLETTER July 2021

Hello Gents,

I won't tempt fate and say the pandemic is behind us but I hope we can get back to normal activities soon. I don't know about you but all this "spare" time I have had, and my list of things to do, has got longer.

- **The Railway.**

The big news is we held an Extraordinary General Meeting as part of the July meeting in the Memorial Hall, to decide whether or not to accept an offer for The Railway. As a result, The Railway has now been sold. The voting was as follows:

11 members in the Room – 10 votes to accept the resolution, 1 Abstention, 0 Against
3 members on Zoom – 3 votes to accept the resolution, 0 Abstentions, 0 Against
7 proxies received from members not able to be present. 7 votes to accept the resolution, 0 against.

All members not present and who did not provide a proxy are deemed to have abstained, as they were informed of, and had the opportunity to vote, and did not.

The motion is therefore carried: 20 votes for, 0 votes against and 25 abstentions.

The Railway served its purpose admirably, gained the Club publicity, and boosted coffers. We now have some serious thinking to do regarding the future, and way forward for the Club. If you have any ideas or thoughts, please let them be known. It does not matter what, it might lead us onto an exciting new project. The membership has dwindled recently and we need new and ideally younger people to ensure the long-time survival of PEEMS.

- **The Mike Sayers Trophy**

We had to postpone the Mike Sayers Trophy from July until the 6th October. This was because, in order to include everyone, it would mean using 'Zoom', and we could not ensure a fair way of displaying all entries equally.

We are in the final stages of working out a template for photographs of entries to be displayed to all in the room, and also remotely via Zoom. I use the word "we" loosely because this job is being undertaken by the only committee members who understand what to do. I confess to not understanding pdf's etc. If you want to enter and feel intimidated by the technology, please don't, because help will be on hand….. just ask.

- **Many Thanks To Mel Doran For Donating A Projector To The Club**

I would like to say thank you to Mel for donating a projector to PEEMS (including a spare lamp). It is much better than our old one**, and is much clearer for our zoom presentations.

If anyone wants the old projector, please contact me or any committee member. ** The lamp is beginning to go indicated by starlight type spots which take up about 10% of the space on the right-hand side of the projector screen.

- **'Bring And Buy' Auction At The Next Club Meeting In August.**

The next meeting in the Memorial Hall on Wednesday 4th August is the 'Bring and Buy' auction. You have had an extra year to collect or sort out valuables that you no longer need so bring then along. What you consider junk some will call it treasure and we all love a bargain.

The Auction is in **The Mill Suite** which is on the **3rd floor**. A passenger lift is available. The lift is on the left just after the reception desk. Doors open at 7 for a 7.30 start. We will be Zooming the evening.

- **Workshop Morning**

There is a workshop morning on Tuesday 17th August. Tea and coffee, magazine swap etc. Come along and get back in circulation. If anyone wants to use the workshop at any time please contact me to arrange access.

That's about all for now, please get a brew and enjoy our award-winning Newsletter.

Keep safe,
Jonathan.

Club Evening 7th July ~ N.A.M.E Award and Mini 'Bring and Brag'

The club meeting was held in the 'Mill Suite' in Pickering's Memorial Hall. Eleven members attended, three by 'Zoom', and there were two guests from N.A.M.E.

First, Chairman Jonathan welcomed guests Frank Cooper (Chairman) and Petra MacGuiness (Assistant Secretary) from the 'Northern Association of Model Engineers' (N.A.M.E.).

- **Award Of The N.A.ME *'Alan Bibby Editors Cup 2020'* To Nevile Foster For The PEEMS Newsletter.**

  After dealing with the business (see first page), Jonathan said that it gave him great pleasure to congratulate Nevile in winning the award. The newsletter has been cohesive for the Club, while the pandemic has been on. PEEMS may have been a bit short on model engineering news during the pandemic, but thanks to all those who have contributed to the articles. Jonathan then introduced Frank Cooper.

  Frank thanked the club for inviting himself and Petra, and outlined the history of the 'Alan Bibby Editors Cup', which started four years earlier. Alan Bibby was a model engineer who was also involved in model railway engineering. Sadly, Alan died nearly four years ago, but he left a nice sum of money to N.A.M.E for the 'Editors Cup'. The first award, 2019 was presented in March/April 2020 in a club in Norfolk. Again, the poor editor was amazed, he didn't think he had done that well. Frank said, "Sorry, you've won". Frank said it appeared that the PEEMS editor was also wondering why he had won.

  What has amazed Frank this year, for the 2021 award, is that there are about sixteen or seventeen applications in, and the standard is fantastic. Things were being done by valued Club members in the past, but sadly their efforts weren't recognised outside their Clubs. Now their efforts are known thanks to Alan Bibby.

  So what does the poor editor get, apart from the occasional accolade, headaches, deadlines and people saying "you could have done it better"? Well, he gets a cheque (£50), and a Cup.

  Nevile said that the award was completely unexpected, and thanked those who nominated him for the award. At the end of the day, the newsletter is only as good as the content, and in that respect he was just a "compiler". The compilation of the PEEMS newsletter was a very interesting and enjoyable experience, mainly because of the excellent standard of modelling in the Club. The Club is eclectic in that it encompasses a vast range of modelling types and engineering. In fact, PEEMS is very fortunate to have members who are at national standard in their fields, and he has learnt a lot from Club members who represent many decades of experience.

  The newsletter aims to be as accurate as possible, and Nevile thanked everyone who took the time to check the articles for errors, and for the article contributors. In that respect the Newsletter was a collaborative effort. **Many Thanks.**

- **News From The Northern Association ~ Frank Cooper.**
  - **Young Engineers.**

    Frank had been asked if there was any interesting news from N.A.M.E. He understood that when you looked around most model engineering clubs, there were a few sticks, a few 'Zimmer' frames, a few grey hairs or none at all. This is THE PROBLEM, because in addition to the model engineers Editors Cup, for many years N.A.M.E. have run a "Young Engineers" presentation.

    Each year, sadly, N.A.M.E struggle to find young engineers.

    There are one or two clubs, however, which are doing brilliantly. Frank didn't know how it started, but they have engineers who take on youngsters, one at a time. Ten or twelve turn up on a Saturday. The programme is structured, and in the last couple of weeks, Frank has been told that two 'young engineers' have just got six years of engineering apprenticeships on the strength of their portfolios. This isn't what the clubs have done, but what they have done themselves. N.A.M.E. have seen these portfolios and they are excellent.

    Frank wasn't suggesting that PEEMS does this, but recommended that the Club speaks to other model engineers about this. When Frank talks about "Young Engineers", he isn't necessarily talking about teenagers, but anybody under fifty.

  - **Railway Guidelines And H.S.E.**

    To come back to railways (Frank spent 55 years with railways), there are new operational guidelines with the agency. Some people may have heard about this. Perhaps it's not relevant for PEEMS now they've sold their railway, but 'The Health and Safety Executive' (H.S.E.) were worried about the number of incidents that have been reported to them on the railway side of things. Derailments, substandard coaches and lack of training have been areas of concern.

    A few people at N.A.M.E under the leadership of Tony Wood, sat with the H.S.E. and came up with new diagrams. They didn't accept everything though. However, if a Club has an incident, H.S.E will be involved. H.S.E is a government agency, but is self-funded. It therefore has to make its own money, which it does by sending out fee notes at £150 an hour. It doesn't matter if you are a mega corporation or a model engineering club, you get the same fee note. Six or seven weeks previously, a club had an incident, and they were expecting a fee note pushing £2000. The H.S.E. start charging from the very minute they start dealing with an incident.

  - **Workshops And H.S.E.**

    This is probably more relevant to PEEMS; H.S.E. have started looking at workshops. They have the right to walk into any workshop in this country, whether it is a model engineering workshop, or a megacorporation. Specifically, they are interested in machinery that don't have relevant safety guards. Recently a club was given twenty-one days to get their workshop back up to scratch, or face prosecution.

    On a bigger scale, a certain railway museum not far from Pickering has, over the last five years, had three substantial fines, in the order of tens of thousands of pounds, because of workshop incidents.

  - **Pressure Vessels and Boilers.**

    For anything that works under pressure, boilers and the like, the N.A.M.E. orange books contain the compliance regulations. The books came out in 2018 and the pressure vessel regulations are still in force today. There are some minor typos that need correcting in the next couple of years, and there have been comments about punctuation. Basically, what is in the books is going to be in place for the foreseeable future. There is no major change on pressure vessels.

    If a pressure vessel is going to be operated in a public place, it needs testing. The regulations even deal with model *Mamods.* If there is a *Mamod* on a counter, operating at an exhibition, technically it needs a test certificate.

  - **N.A.M.E. Meetings.**

    You are always invited to a meeting every six months. N.A.M.E haven't had a meeting for the last eighteen months, but will be meeting again around the 22nd/23rd of October. N.A.ME. are just off the M1 near Derby. Anyone can come, and it's a free lunch. The meetings don't last more than two hours, in fact there is a timekeeper on the front row who announces fifteen minutes beforehand that the meeting will end.

    The N.A.M.E website is at this link: https://www.name-1.org/

- **Mini 'Bring and Brag'**
  - **A Model Of A *'Hit and Miss'* Engine ** ~ Tony Leeming**

    Many years ago, when Tony was in his early twenties, he went to a village agricultural show in mid-Wales. That was the first time he saw a *'Hit and* Miss' engine. Since then, he has always fancied one. Tony has actually shorn a sheep using one which drove the shears.

    This engine came to the Club with other items, as a donation. It was put into a lottery. Tony was very pleased to win this one.

    When it arrived, it obviously had been in a shed for a very long time and had suffered from condensation. Also, it wasn't completely finished, although it seems someone had tried to run it.

    The wheels are held on with wedges. On one wheel, the wedge had come loose and the wheel had moved over. The governor had moved over into the valve timing and had bent it. All that needed to be fixed.

    Having done the repairs, the engine was painted. One or two oil-ways hadn't been drilled, so those were put in. The engine is now at the stage where it ready to be run, but there is no compression. Tony has been talking to Mike Sayers about that.

    In the original instructions which came with the engine, (it must have been produced quite a time ago, as the instructions were done on a *Gestetner* type duplicator), it says that the piston needed to be turned 5 thou oversize, and then the rings parted off. Having done that, a knife blade placed on each piston ring, was to be hit with a hammer to crack the ring in order to gap it. As Mike said, that is not the right way.

    Tony has played around with motorcycle engines, and knows the piston rings were much tighter than that. They needed springing in order to get them in. He is going to make new piston rings for the engine.

    He is not happy with the ignition. It produces a good spark, but not always where it should be. Tony hadn't brought the ignition system with him, but the black cap which came with it was a strange idea. There is a spring in it between the top and the inside. It is a shielded wire which Tony thinks is shorting inside. He thinks he can buy a small cap which will do the job. So, it is a "Work in Progress" and Tony is enjoying it.

    The engine has an atmospheric type valve on the exhaust inlet. When the piston goes down it sucks it open.

    Questions and Answers

    Q: Was the engine fully built when you got it, and how much work did you have to do on it?

    Tony: The engine was 99% built and I've done a modification to the piston**.** A wheel had moved over and it clashed with the cam shaft which is on a spindle. I've modified it by putting a collar on the crank-shaft, and boring out the little housing within the wheel so it can't move over again.

    The only thing missing is the oiler, and I haven't a design for it. According to the papers, the person who owned the engine before me, wrote and ordered one, but it wasn't there when I acquired the engine.

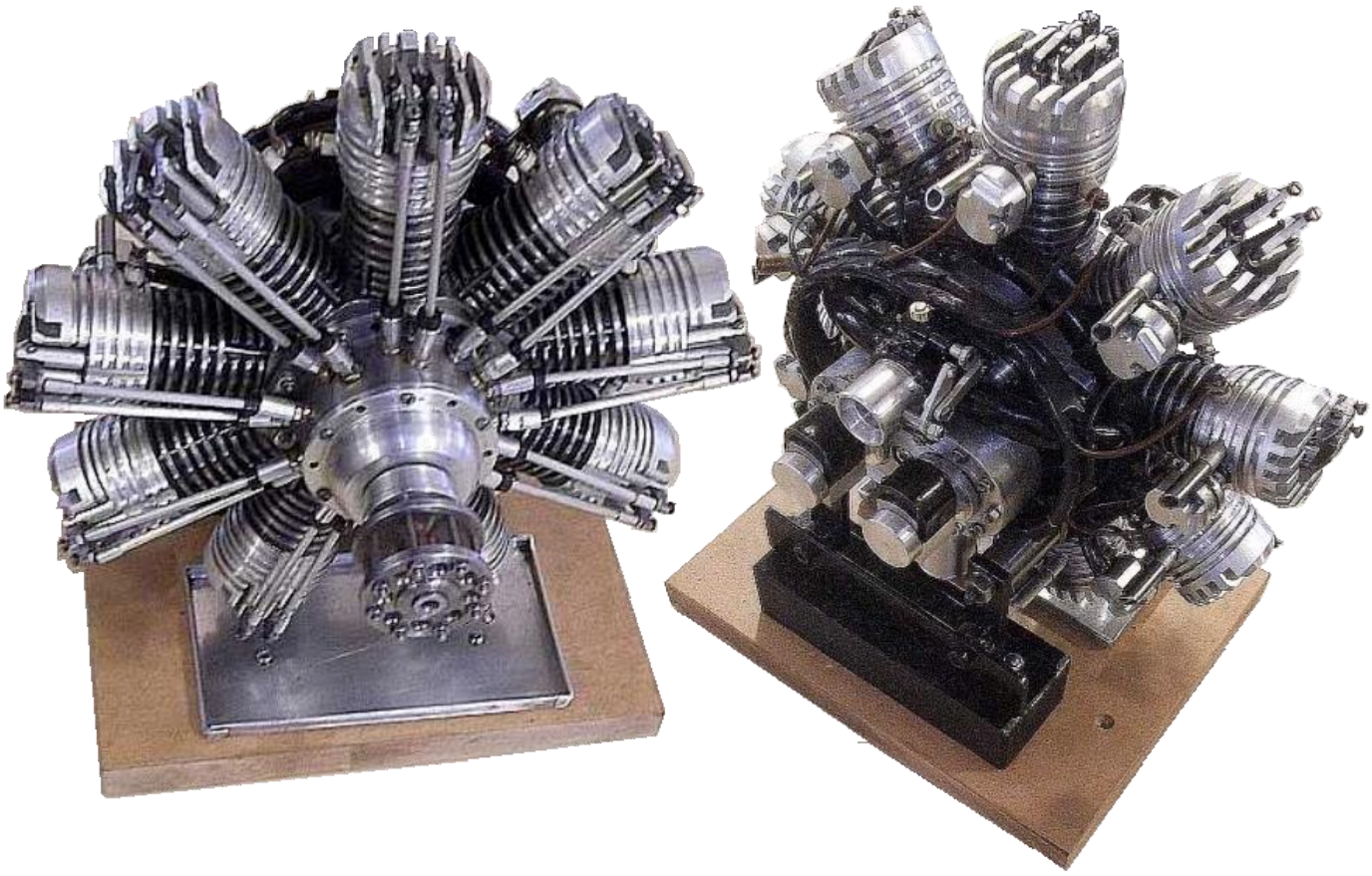
    Q: Did you have any indication when you got the engine that it had been running in the past?

    Tony: No. I think that if it had been running, the ignition device would have been mounted somewhere, which is what I intend to do. The ignition device needs to go on a chassis mounted on four cast iron loops.

** *A hit-and-miss engine or Hit 'N' Miss is a type of internal combustion engine that is controlled by a governor to only fire at a set speed. They are usually 4-stroke but 2-stroke versions were made. It was conceived in the late 19th century and produced by various companies from the 1890s through approximately the 1940s. The name comes from the speed control on these engines: they fire ("hit") only when operating at or below a set speed, and cycle without firing ("miss") when they exceed their set speed. This is as compared to the "throttle governed" method of speed control.*
(Ref: Wikipedia)

- **A 1/5th Scale 'Hypothetical' Bentley BR2 Radial Aero-Engine Model ~ John Heeley**

John presented his new aero-engine project in the November/December 2020 newsletter. This was based on the Bentley BR2 rotary engine, but with nine fixed radial cylinders. It is a 'hypothetical' development of the engine and represents an imagined version which could have appeared in 1921.



Seventeen years ago, John built the Bentley BR2 rotary engine, and had a picture of it on the wall for quite some time. He got the idea that he would like to make something similar. The idea was "what would Mr Bentley have done if he had stayed in the aero-engine design business rather than making motor cars"?

This model is based on the kind of thing Bentleys might have built in the early 1920s had they moved on from the rotary engine which spins around to a radial engine with fixed cylinders.

The whole concept is that it follows very closely Bentley rotary principles. There is a steel crankcase with the standard two valves and the long push rods, exactly like the rotary engine, but this time as a fixed radial. The cylinders however, are the opposite way around to the actual engine, with iron cylinders and alloy cylinder heads. John thought this was justified because on a fixed engine, the cooling problem is greater than on a rotary. If Bentley had gone down this path John assumes that logically they would have put alloy cylinder heads on. Mr Bentley was keen on aluminium. So this is a "what might have been" rather than a specific scale model.

John has been very careful to make the engine look as if it was from 1921, possibly even a prototype. It is deliberately messy at the back with a lot of wires and tubes. For demonstration purposes, John wanted the model to run on compressed air rather than as a conventional petrol engine. There is no reason why it can't be turned into a conventional petrol engine; simply changing the valve gear over to the Bentley type valve gear, installing spark plugs and possibly some different piston rings could do it.

The engine was built over eight and a half weeks beginning in August 2020, and a photo was taken every night. It has been the easiest model that John has ever made. There are no drawings or dimensions, and the

model has just “grown on the bench”. John has just used slide gauges, callipers and jigs and fittings. There is a 20” wooden propeller and the wooden box the engine is mounted on to give propeller clearance. When it came to put the compressed air in it to make it go……it didn’t. It took a while to work out why. It was a total puzzle for quite a time.

To solve the problem, John built a single cylinder for testing. All the components in the single cylinder are identical to those in the radial engine, except for the crankcase which is for a single cylinder. The idea was that all the problems could be worked out on the single cylinder. Using the single cylinder model, John realised that using compressed air was not as easy as first thought. The inlet valves were set up to open at Top Dead Centre (T.D.C.), to push the piston down, which it does quite happily. At the bottom the exhaust valve opens to let the air out which it also did. However, 50% on the way up on the ‘upstroke’, it hit compression. That compression on the last 50% of the piston movement is greater than the pressure developed by the compressed air on the other side. The result is ‘stalemate’ and the engine doesn’t run.

John had to play around with the timing, and he is opening the exhaust valve when the piston is 50% on the way up, and is closing it immediately before T.D.C. The inlet valve is then opened immediately after T.D.C. This must all happen at the same time, there has to be a crossover, and there has to be a point where both valves are closed, otherwise there will be an enormous leak. Adjusting the timing like this sorted the problem and that got the little engine running first and then the larger one next.

There was quite a big leak coming up the inlet valve guide. Normally there isn’t positive pressure in the inlet. On the petrol engine, it is normally pulling a vacuum. John therefore cut a small recess in the head, put an ‘O’ ring in, put a round washer on top of it and then assembled the valve and valve spring and collet on top of that to hold it into the head. He did that for both the inlet and exhaust valves, and it works. A seal is provided around the top of the inlet and exhaust valves. John’s work on both the inlet and exhaust valves has got both engines running quite nicely now.

The little engine runs perfectly on 15 psi. It makes a noise like a 1920s cement mixer which is quite pleasing. At that point John decided ‘to dress the engine’ up a bit to make it look like something. It has a “No-Spark” (dummy) magneto and a “Nonsuch” (dummy) carburettor. The ‘Nonsuch’ carburettor has an inlet at the bottom where the air enters.

The same arrangement has been included on the back of the large engine. The carburettor could be made to work. On the large engine the carburettor looks very similar to a ‘Wal Phillips’ fuel injector from the late 1960s which were quite popular on motorcycles. It used to be called an ‘organised leak’, and is basically a butterfly valve and a tap in a pipe. This was used rather than the ‘flat slide’ carburettor which was originally on the Bentley rotary. John used the ‘Wal Phillips’ type carburettor as he had more experience with that than the ‘flat slide’.

John has never had anything go through the workshop with so little trouble. The next step will probably be to fit the Bentley type valve gear, introduce some glow plugs, and see if he can get it to work in the normal way with petrol. If it doesn’t run with petrol, it is no loss as he can still run it on compressed air.

Questions and Answers.

Q: Can you throttle it?

John: You can throttle the air if you want. I've got a valve in the airline. The carburettor is joined to a cross-pipe. The cross pipe doesn't go into the ring main at the moment. It has been made to sit up against it with some rubber, but is not fastened to it. So if it is to work as a normal petrol engine, the first thing is to braze the cross-pipe into the ring main. There are two distributors on the front of the gear case which contains gears and spindles. I fly cut my gears. I have a special fixture that holds everything. I don't know how to cut gears properly, but the way I do it, they still work.

The magnetos could be arranged to drive contact breakers.

The easy way to fire it up properly might be to use glow plugs in each cylinder. The combustion space is very small which is a problem. The engine is 38cc, and the combustion spaces are only 5mm deep. The glow plugs will have to come in from the sides as the inlet and exhaust valves occupy the top. I am not confident that I could make working spark plugs given the restricted space. The original BR2 was a bigger model whereas this is 1/5th scale and it is 1/5th scale because of the size of the rusty metal used to make the crankcase. I did make ¼" spark plugs for the BR2 model, but to get spark plugs in this would require 5 BA or 3mm with an 1/8th thread. I am concerned that I could get a centre core that didn't spark over through the insulator. The best solution is a glow plug in a chamber, as close to the combustion space as possible, without actually being in it.

Q: What pressure does that engine work at?

John: As much pressure as I can get. The compressor is running at about 65 psi. If I run it up to full, it will run full time. I am going to improve it running on air, and do more sealing. It is using a lot of air at the moment. It is not easy sealing nine cylinders.

Q: If it runs on air, will it will run on steam?

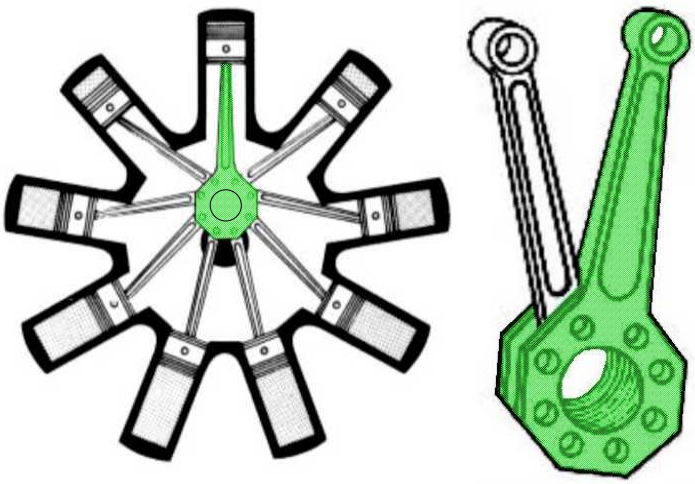
John: Yes it will.

Q: With the compressed air, are the valves in the nine cylinders opening in sequence?

John: Yes, they go around in sequence like a 2-stroke. The eccentric that works inside the cam, follows the crank pin around. The timing is set up on the first cylinder at the top. I had to make my way into it with a little extended blanking plug, that you have to unscrew, because there is no other way to find T.D.C. on cylinder 1. If you find T.D.C. on cylinder 1, the crank moves around and it opens each cylinder valve in turn. The timing remains the same all the way around. Without the blanking plug in the top, you can't find T.D.C.

Q: Are they "master and slave" rods?

John: Yes they are. One rod is attached to a body on the crank pin. The other eight rods are then pinned to the body. It does mean that the piston acceleration does vary between the solid rod and the pinned rods, but that is the same for all nine-cylinder radial engines.

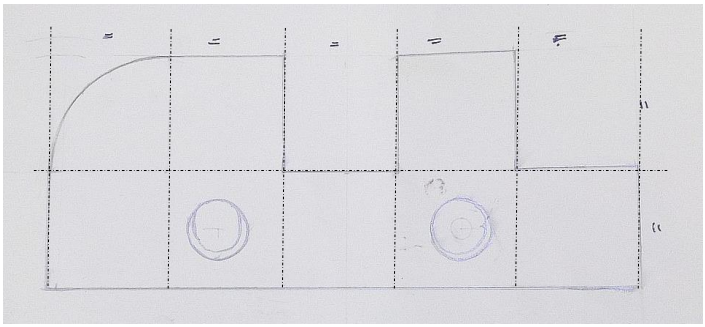


- **RAF Engineering Tech Trials ~ Peter Bramley**

Test Piece

Peter had some experiences in the air force which link into model engineering. When you do a course, there is usually a test at the end of it and this what happened with RAF Tech training.

One of the tests was this:



It was a test on marking out, and making things fit one another. All the dimensions on the piece are equal both horizontally and vertically.
The component was 2.5" long and 1" wide, so all the divisions were 0.5".

It may look a simple piece to make, but all the dimensions have to be made equal, and it's not quite as easy as it looks. The idea was that your test piece should interlock with someone else's test piece. There were fifteen to twenty people doing the six-month course.

No mechanical tools or equipment were allowed on this. In each person's tool-box, when they started the course were: a hacksaw, a square, dividers, a scriber, a twelve-inch rule, centre pop, files and…..a hammer.

All the dimensions had to be within 1/64". How do you measure the gaps accurately? It's not as easy as everyone thinks. At the time, Peter had bought a 1" micrometer and was the only person the course who had one. That should have made things more accurate for him compared with everyone else.

The test piece was black mild steel and the scale was filed off to give a reasonably smooth surface for scribing. There was no marking out blue in the tool box.

The first thing was to get a straight edge with a square edge on it, and the edge had to be square right across the plate. Once that had been done the marking out was done. The top and side edges were then filed. Using dividers, the lengthwise centreline of the plate was established. The internal square and the square on the right were then scribed out. The squares were then centre popped to give witness marks. That was important otherwise you didn't know where you were.

The micrometer was then used, as the first and third vertical edges are 1" apart as are the second and the right-hand edge. This allowed the two squares, which were to be removed, to be precisely positioned. (A lot of people would mark out the piece, and then cut off all the spare bits they didn't want including the radius, which was a mistake). The squares were then cut out. The micrometer allowed the horizontal edges to be made parallel. Once the test piece was all filed out to size it was then taken to an instructor, and he inspected it to make sure all the witness marks were cut in half. Finally the rulings were all filed off.

For most people, the difficult part was putting the two studs in. Because Peter had been doing a bit of model engineering, he'd learnt two little tricks. Once the test piece had been inspected for the first time, people were given a ¼" rod which had to have lengths sawn off which were then threaded to form the studs.

It was known that threading by hand was not very accurate. Fortunately in the workshop there was an electric pillar drill. For those that knew about it, the holes were drilled in the test piece, taps were put in the chuck and wound down to keep the tap square to the hole, and then it was finished with a hand wrench.

That is fairly easy for most people, but when it came to threading the rods (studs), Peter has found it difficult to make a straight thread on a rod. He did know about putting a die holder in a drill chuck, to start the thread that way. Fortunately, they were working in a big hangar, and there were many types of aero-engines in there for training purposes (as it was a training school). The more observant noticed that a few engines had studs missing. If you knew about this you had a couple of ¼" BSF nuts in your pocket. Studs were removed surreptitiously, and if they needed to be threaded down a bit that wasn't too bad. Unfortunately, that was cheating, but the air force took the view that by doing this, people were using their own initiative. Why make something, if it was already there !

Shackleton Fuel Tank.

Six or seven months after completing the course, Peter was stationed at the airbase in Gibraltar, where they used to fly Shackletons. One of the Shackletons was a Mk 1. It came in on the Friday or Saturday. At 9 o'clock on the Monday morning, a signal came in that the aircraft was grounded. Two or three days later, they found out that the whole MK Shackleton fleet had been grounded because cracks had been found in the main spars. This meant Gibraltar had a spare Shackleton that could have pieces taken off. However a few days later a repair kit was sent out to modify the aircraft. This consisted of replacing 3/8" bolts with 7/16" bolts.

To get to where these bolts were, the fuel tanks had to be removed and the bolts could only be accessed through the fuel tank aperture. The 3/8” bolts were then taken out one by one. A special reamer had been made and the bolt holes were then reamed out. The problem was getting the tank bay panels out. They were held in by 1/8” pop rivets. There were hundreds of them. Windy drills had to be used because it was a fuel tank area and electric drills could spark. The windy drills rotated at 6,000 to 7000 rpm. 1/8” drills drilling out pop rivets don’t like those sorts of speeds, so drills broke regularly. The result was that six pops were drilled out before the drills needed resharpening. All the resharpening was done in the ground equipment bay, which had an offhand grinder. After a couple of days, it was noticed that Peter’s drills were lasting longer than anyone else’s. He was able to drill out twice as many pops as anyone else before needing to resharpen. So it was Peter’s job from then on to sharpen all the drills.

Fortunately, Peter had read one or two articles on sharpening drills. In those days, to sharpen an 1/8” drill, all the angles and clearances had to be just right. Peter never got to see the job finished as he was only sharpening drills for seven days before he went home on leave. It was unbelievable what room pop rivets take up when they have been drilled out. And they ALL had to be removed from the aircraft wing, because if only one had been left in, it could have jammed a control.

Promotion Trade Test.

About sixty years ago, Peter had to take a trade test for promotion. One of the tests was soldering two pieces of slightly rusty bright mild steel together. The pieces were cleaned up roughly before they were soft soldered together with a ½” lap joint.

The requirement was you had to end up with a thin solder line, a ½” overlap and it should be reasonably finished. Obviously for promotion word had got around what was going to happen. You got twenty five marks for doing the job correctly and five marks for presentation. That was half way to passing the full examination.

Fortunately, two or three months earlier, an article appeared in ‘Model Engineer’ magazine on how to soft solder correctly. Most people would clean the area to be soldered, flux it and then put a liberal amount of solder on. After reading the ‘Model Engineer’ article, Peter approached the job in a different way. He cleaned the area to be soldered, fluxed it and put a fair amount of solder on. Then using the iron, he swept as much solder off as he could, so it left a tinny line on both sides. To get the best result Peter then put the iron on one side of the joint to make sure the solder flowed right through, and then held the iron to the joint until it cooled off. He knew he had a pretty good joint. The distance from the instructor’s cabin to the workbench was twenty paces. Before giving the joint to the instructor, Peter tested the joint by flexing it. The instructor then walked twenty paces flexing the joint on each step. No-one before Peter had achieved seventeen paces.

Peter had given the joint to the instructor in the early afternoon, and he spent the rest of the afternoon flexing the joint. The instructor asked Peter what the secret was, and Peter said “Sarge, that’s for me to know and you to find out”. If it hadn’t been for reading the article in ‘Model Engineer’, Peter reckons he would have only got twelve or thirteen paces out of the instructor.

- **Further Build Details Of Stuart Walker's *'Dos Amigos'* 1:50 Scale Model Ship.**

In the February 2021 PEEMS Newsletter, Stuart presented the build progress on his '*Dos Amigos'* model ship. He gave a brief history of the original ship, and explained some solutions to rigging problems he encountered.

Here, further details are given about the build, and the photos present the finished model.

Building The Model

The hull is a carvel construction using hardwood planks that are shaped, glued and nailed to a plywood framework, which represents the ribs structure of the ship, and are faired to describe the hull shape.

The planks butt up tight to one another, and the ends are bent to shape before they're fixed to the frames. Tight bends are achieved by soaking the wood in warm water, and steam bending over the hot body of a soldering iron, to gradually form the desired shape. Nail holes are pre-drilled to avoid splitting the planks. On completion of the planking, all the nail heads are filed off, and the hull finally faired with sandpaper to a smooth fine finish.

A thin plywood deck was bonded to the above framework, which defines the camber profiles and provides a base for bonding the thin deck planks. The appearance of black caulking between the planks can be achieved by using plastic strips - I used black thread to good effect.

The covering boards (edge planks) forming the junction between the deck and the hull have to be steam bent to follow the ship's profile. The same goes for the capping rail. Both can be laminated or spliced, but it looks better if it's bent. This is best achieved by fixing a plywood former to a flat sheet of thick plywood, and encouraging the bend with a steam flat iron.

The various hatches and deck housing are straightforward enough to make. A razor saw and various sanding sticks are used to ensure gap free joints, for finally cleaning up the glued joints, and for smooth finishing the work.

The brass deck cannon supplied in the kit is not supplied with a sliding metal base cradle, the idea being that wood should be used. However, it didn't look right, so I machined a cradle from solid brass and aged the whole thing with chemical brass blacking.

The masts and spars were made from straight dowel stock, and were sanded down to the correct profiles by mounting them in a drill chuck. As far as possible, all the fittings were added and part assembled on the bench before being permanently mounted on the model. With the hull held securely by the keel in my bench vice, a guide frame was made and used to achieve the correct rake for drilling the mast holes down into wooden blocks glued into the hull substructure.

The standing rigging is in black, using 0.75, 0.5 and 0.25 mm diameter rope type thread - the smaller being used for ratlines. A mostly 0.5mm diameter natural hemp coloured thread was used for all running rigging, and the 0.25mm diameter was used for the flag halyards. I tried using very fine thread for whipping the looped ends but as it was far too springy, ended up using 0.13mm diameter blackened copper wire.

Similar treated wire, but in 0.5mm diameter soft brass, was used for making the chain plates, eye pins, hooks and binding around the rigging blocks. I found the latter particularly tricky, and thought I needed to make some sort of jig. However, it all seemed too complicated until I suddenly realised it could be very simply achieved by using small round tapered pliers and callipers to measure the wooden blocks, and then transfer the dimensions with simple pencil marks on the pliers. By using these marks, the thin wire can be precisely bent and fitted around the little wooden blocks. A good tight fit can be achieved, and if it turned out to be a bit slack, an extra twist of the eye end usually made it secure, and a small amount of superglue locks it all together.

In fact, all my rigging is permanently secured with superglue, and it's very useful to coat the ends of the threads that have to pass through the very small holes in pulley blocks with it, which made it much easier to control and guide the threads.

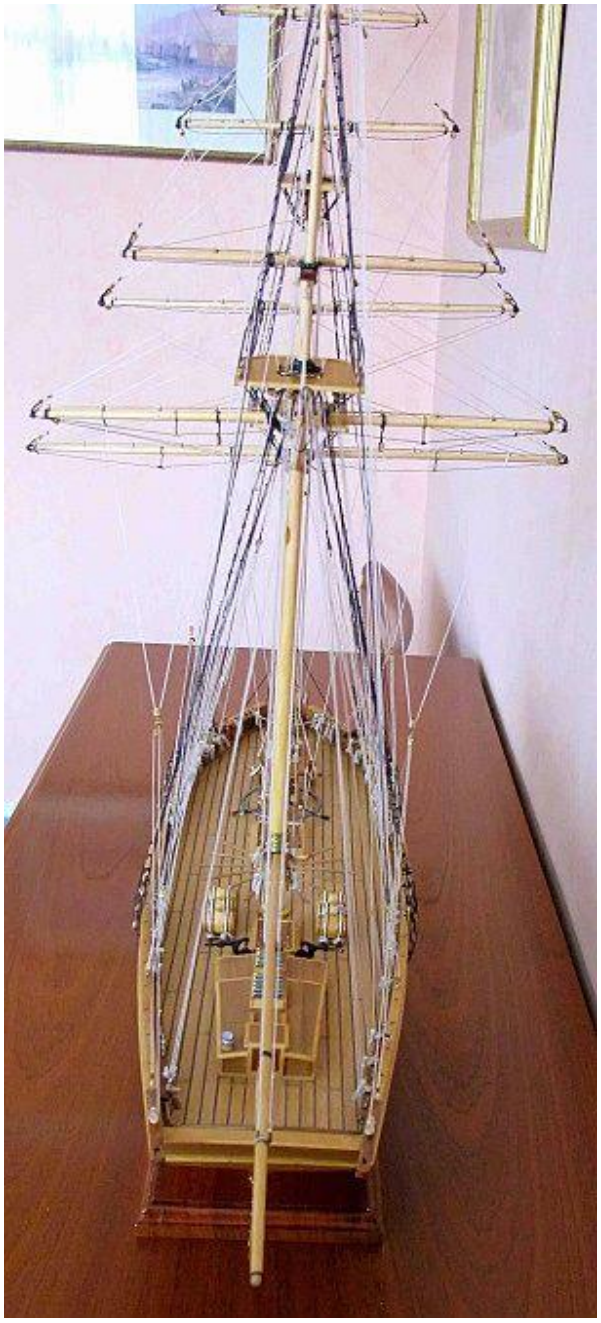
Although I was careful, I did manage to stick my fingers together on one occasion, but quickly found that brake cleaner came to the rescue!

It's not a wise move to superglue the rope ends on to the belaying pins until the whole of the rigging is complete. I often found it necessary to relocate and adjust the rigging as the operation progressed.

I used a clear spirit-based shellac sanding sealer to finish all the wood. Some of the spars looked a bit too pale and were toned down with a darker shellac coating.

On the whole the drawings were good, but the position of the rigging lacked some clarity. It's useful to have an understanding of full-size practice, and see what other modellers have achieved. Many of the older books are out of print, but they're full of useful detail and worth looking out for on the second-hand market.

Examples are books by Howard Underhill, who wrote "Plank on Frame Models" in two volumes, as well as a further book entitled "Masts and Rigging". More recently, Philip Reed has written some excellent books describing how he made some of his truly wonderful ship models which include very realistic dioramas. He seems to be one of the very few modellers who manage to make sails look realistic. Examples of Philip's work can also be found on YouTube.



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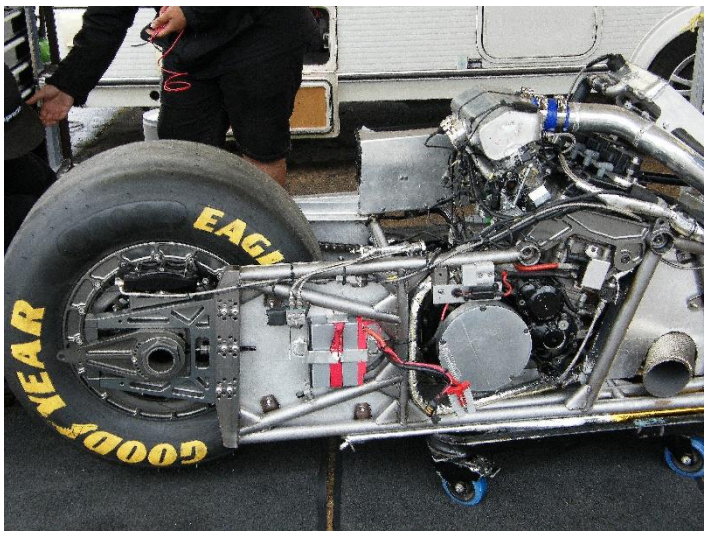
- **Further News From Elvington and The New Melbourne Raceway (York) by Paul Windross.**

  A few pictures of ‘large blowlamps’ at the last Melbourne Raceway drag race event.



Today’s (12th July) wet Elvington Top Speed Test Day, and Will Formosa’s latest two wheel drag machine with a past photo of his 2019 creation.



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The *'Paul Windross Trophy'* Awarded To Graham Sykes.

Graham Sykes used to watch me at Elvington when he was about twelve. I donated a shield trophy to *Straightliners* last year.

Straightliners bossman Trevor Duckworth yesterday (12th July) presented *'The Paul Windross Trophy'* to Graham Sykes.

The trophy is awarded for engineering excellence. Well deserved, Graham!

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- **Lathe For Sale**

PEEMS Member Ken Shutt is offering for sale the following workshop equipment ~ See photos next page

Prospective purchasers are requested to contact Ken directly either by email or mobile phone both of which can be found on the Members List.

Colchester Bantam Lathe. 5.5ins centre height x 20ins between centres, 1ph motor.

Lathe complete with the following items:
3 jaw chuck, 4 jaw chuck, face plate, catch plate, ER32 collet chuck mounted onto backplate, set of 21 - ER32 collets 1.5 - 20mm.

Swivel tool post, quick change tool post with 5 x tool holders, 3 post steady, various tools, centres, rear tool post, Jacobs chuck.

Instruction book. Weight approx 445 kg.

Price £1400.00

Contact:
If you would like to contribute to the Newsletter, the contact is:
Nevile Foster Tel 01751 474137 or e-mail nevf123@outlook.com