PEEMS NEWSLETTER: 23rd March 2017

Comment

March was another eventful month for PEEMS.

The workshop is being extended into the side room, which has been cleared. Roofing insulation, and plasterboard has been installed by working parties of willing volunteers. Wiring has also been attended to. PEEMS would like to give Great Thanks to John Powell in recognition for all his hard work. Mike goes into greater detail of the planned and continuing work in progress below in the newsletter.

There was a Bring and Brag meeting on March 1st, and while the nine projects on display represented only a fraction of the actual projects being worked on in the society, it did demonstrate the wide variety of engineering at PEEMS, from a soda can Stirling engine to a scale model working jet engine! It was therefore decided that March's Bring and Brag warranted a more detailed description of each project. It is hoped that the eclectic mix of projects presented will encourage others to present their ongoing projects at October's Bring and Brag.

Preparations are in progress for the Doncaster Show in May, and more details are provided in the newsletter.

Paul Windross continues to make good progress health wise, and he is back to "metal munching". His letter is presented in this newsletter.

Recent Activities

Workshop Matters

Last month it was realised that the workshop would need re-organising to install the milling machine correctly. Since then, much progress has been made.

It must be said that the workshop has not been overwhelmed by the stampede of volunteers offering to help but John Powell, Dave Hick, Chairman Jim, Pete & Chris Bramley, Secretary Tony, Editor Nevile and Eric Foot have helped to a greater or lesser degree. (Hope nobody else sneaked in without being noticed!!!)

All machines have been re-positioned and new benches, cabinets and wall shelving constructed in the inner machine shop by John and Dave. In the new extension area the roof has been insulated with Kingspan kindly donated by Dave Dobson. First fix wiring for the lighting has been installed by Tony and the new plasterboard ceiling, kindly donated by Dave Hick, has been put in. A first coat of white paint has been applied to the block walls despite Pete insisting it should be pink !!!!

This is all a tremendous amount of progress in four weeks and it is hoped to keep up the momentum in order that the workshop can be fully functioning in a few weeks time. *Mike*





Club Dinner

The Club dinner on the 10th March was well attended by members and their wives and partners. This took place at a new location, the Norton Indoor Bowls Club. In addition to the Indoor Bowls, there is a bar, Oscar's restaurant and a dance floor, although there was no dancing in the evening!

Oscar's has a very nice ambience, and PEEMS would like to thank Julie Copland and her staff for the excellent service, and of course the wonderful food.

A very able Derek Lowe was the raffle caller, quickly becoming expert with the Indoor Bowls Club raffle indicator!

Bring And Brag 1st March

i) Magneto Parts and Riley Bonnet Louvres by Mike Sayers

Mike is currently modelling magnetos (pictured) for his 3rd scale Bentley engine. The bodies have been made, and the gears have been cut. In addition, a contact breaker housing has been manufactured.

Mike is also restoring the bonnet sides of an old Riley. He manufactured the jigs, and made the tooling. The two aluminium panels, for each side of the car, have been formed using a fly press and joggling wheel.

Sixty two louvres have been formed into the panels, each at 15° to the vertical, with half opposite handed.

The louvres were created individually by 'Punch Louvring' each section and length, indexing the panels through a fly press.

'Roll Louvring' can be used for curved panels. The louvres around the front apron below the radiator are curved, and all are different.

ii) Precision Light Pillar Drill by Peter Bramley

Peter's pillar drill is an improvement on a predecessor, and is a high speed precision drill for small holes. It was developed from an original fruit squasher with a new longer and deeper head. The material for the new parts was found 'underfoot' at Gromont railway station! The lever is original, as is the bearing and pulley. At the top is a plain bearing and below, there is a 0.5" ball bearing. A bush had to be made to fit this bearing. The collet fitting is an ER11 and there is a tapping device to put in. The vice attached to the base will have longitudinal and transverse travel. There will also be an LED light to illuminate the component from behind the operator. This will attach to the drill with a magnet. The speed of the drill is expected to be between 3000 and 5000 rev/min.

iii) Planetarium by Doug Pickering

This is a first project for Doug. The arrangement currently represents a Sun, with an orbiting moon. The large globe metal required turning, and the Earth was made from clay with an earth picture attached to it. The current editor of "Model Engineer" magazine is an astronomer, so some advice may be sought from him to enable the setup to be finished.

iv) High Speed Milling Head by Richard Gretton

Richard presented a milling head for a high speed drilling and milling machine. It will fit Richard's existing "Alexander Milling Machine" and would also fit onto a "Deckel" milling machine of which the Alexander is a copy.

It has a precision slide which will take tiny drills and milling cutters. There is an ER11 collet on an end motor which has a speed of 12,000 rev/min, although variable speed is provided with the kit. The slide is like an ordinary square slide arrangement with rack and pinion, which runs within a tolerance of 0.2 thou.

The system runs at 100 Volt DC max with a single phase 220 Volt AC input. There is a potentiometer to vary the speed.

The ER collets can go down to 0.5mm and up to 7mm, and can be used for grinding. There is also a slide lock for milling.









v) Multi-Angle Vice by Ted Fletcher

Member Ted Fletcher brought along his Taiwan made angle vice (cheap and cheerful) together his home-produced disc type angle plate adapter, which when fixed to the vice, enables him to cut compound angles on his bench top milling machine. The idea came about when he saw an advert for the Australian made Diamond lathe tool which requires the use of a compound vice to cut a slot in which the lathe tool fits. The disc's curved slots line up with those on the mill table, and the other bolt holes in the plate coincide with the vice clamping slots.

vi) Inverted Vee Twin Steam Engine by Brian Stephens

This steam engine consists of one cylinder and a conrod and was manufactured in three weeks.

The cylinder is sleeved and the engine is in aluminium to keep the weight down. The aluminium flywheel works well on this scale of model.

vii) A 'Soda Can' Stirling Engine by Mel Doran.

This engine was inspired by Joshua Zonker's YouTube video: 'DIY Cheap and Easyish Soda Can Stirling Engine'. Mel has had it running. It consists of two lager cans, a plastic elbow, and a CD as a flywheel. The diaphragm, at the top of the elbow consists of a 'thumb' from a rubber glove and the displacer inside the bottom of the cans consists of wire wool moulded to the internal shape of the lager can.

The heat source can be a Tealite candle, or simply meths and a wick. This engine only cost £2 (for the lager!).

The YouTube video shows one of these engines running.

viii) 16mm Narrow Gauge Locomotive Tender by David Hampshire

David explained that the '16mm Narrow Gauge Railway Society' is one of the fastest growing model garden railway societies in Britain with a current membership of 4,500. He originally had a 16mm gauge layout in his garden in Norfolk and when he relocated, he rebuilt it in Pickering.

Back in the 1940s engineers built working steam models of the 2 foot narrow gauge railway engines as seen in Wales and other parts of the world. They ran the engines on coarse O gauge track (The only track commercially available then). David explained that

O gauge track measures 32 mm across from the inside of one rail to the inside of the other. Hence 32mm equated to 2 feet, thus the scale of 16 mm to the foot used by members of the garden railway society to build engines and rolling stock.

David has made 10 battery electric engines, but buys his working steam engines. The last one he purchased was a model of a typical small narrow gauge tank engine.

The original narrow gauge tank engines worked in the yards only, and the coal was picked up in baskets and put on the footplate. Now, because they are used for passenger work, they often have tenders, the model pictured being an example. The model tender was created by bending a sheet of copper over a former. The joints are soft soldered and the interior is wood. The coal is real. Most of wagons in this scale have wheel compensation rather than being sprung. There is a garden railway show in Peterborough during March.

David finished by explaining that the current full scale main line gauge of 4ft 8.5in was based on the width of the backside of a horse from early colliery days!









ix) Engine for Aero Vodochody L29 Delfin *by John Heeley*

John explained that the model is based on a Czech jet engine which is variant of a Rolls Royce design.

The engine is a Motorlet M-701 and is a centrifugal jet engine. It was used to power the Aero L29 Delfin jet trainer.

Every airforce in the eastern bloc, used the L29 trainer, except for Poland, who made their own.

Many L-29 aircraft ended up in America. It is a very nice aircraft to fly and a very nice trainer. John knows that because he flew a simulator!

To build the ¼ scale model engine, John acquired the drawings for every part of it. To establish the model, John needed to know the exact dimensions and then to scale from that. A very basic general arrangement model was then built. Some compound curvatures, (eg. the combustion chambers), were determined by eyesight alone, at various angles, using cardboard templates.





The front of the engine was milled from aluminium. The black front consists of one hundred pieces of aluminium made up of 10mm plate in circular slices. John doesn't believe in metal to metal joints, so the components are pinned before being bonded with Araldite.

The forward centrifugal compressor is now in place. It was manufactured from brass sheet and assembled with silver solder. The blade tips were pre-curved on formers.

The full scale engine is small and is only three feet across. The original Rolls Royce engine had a number of accessories mounted radially around the front of the engine, and protected by a mesh. The M-701 is a lot tidier, with a clean front and the accessories mounted in a less obtrusive way.

The engine only produces 1900 lbf thrust. There were six mark numbers, the later marks being made from better materials and therefore the hours between maintenance increased by a factor of six. In the actual engine there are 72 turbine blades, whilst in the model there are 36. The blades are machinable stainless steel and need to be substantial because they receive thermal abuse. The blade set took ten machining operations, and nine weeks to manufacture.

During assembly, a turbine disk was slightly crushed, and more work is needed. An 'out of tolerance' of 2 thou was sufficient to cause the damage during clamping. The blades are secured in place with Locktite for assembly into 7mm dia x 8mm deep brass slots, and then one 3.5 mm diameter cross pin is used to secure each blade for its operations at high temperature.

The rotor assembly of compressor turbine and shaft and are balanced using knife edges.

The centre shaft, is supported by two sets of bearings: anchored bearings at the front and ball race bearings at the back of the housing. The full-scale engine has roller bearings at the back.

The model engine runs on propane, and John has a track record in getting these model jet engines to run!!

(Thanks to Ian Bryce for the photos of the models, and to members for their proof reading.)

Member Information

A Message From Paul Windross

Hi all, just an update.

It's been a long haul health wise. The serious stuff started in February 2016, then complications. The good news today, after an endoscopy that was rather easy, is that there is no trace of the malignant

ulcer. I think to relax is the best way with the endoscopy. The first time is always a bit daunting, but this was number three.

End of the month, after a Pet Scan, will know if Burkitt's Lymphoma has been put in remission. There are other health problems to sort with the GP, but one step at a time.

Personally, I think my healthy eating has helped in the demise of the ulcer. I don't eat processed food, and cook my own meals. There are no spicy meals and very little acidy meals. Only wholemeal bread, fish, chicken, very little sweet food, plenty of fresh fruit, and I try to keep active mentally and when health allows, exercise.

After this morning's pleasant surprise, back to my heaven, and wire worms production. I'm just roughing out the crankshaft halves (photos overleaf).

Will have to make a jig to eventually bore the big end holes. A smaller version was made to do the model V Twin webs years ago.

The simple jig Wal Phillips had for aligning the old Jap speedway crankshafts, is similar to what I used on the model V twin.

Seeing I'm keeping off the alcohol, metal munching has to take its place Paul



Checking Alignment



Jig Attachment ~ Boring Again.



Forthcoming Events

Club Meeting Wednesday April 5th

Martin Sanderson – Musical Instrument Repairs.

An old PEEMS newsletter reveals that Roger Taylor gave a talk on "The History Of The Cornet", on April 6th 2016, so it is timely that we will have another talk with a musical theme a year later.

Visit To Newark Air Museum Friday 7th April

The visit to the aviation museum will take place Friday 7th April. The cost of entry is £8.25, and transport details will be discussed at the next club meeting.

Workshop Morning 18th April 10 -12 noon

24th National Model Engineering and Modelling Show Doncaster, 12/13/14th May

The following information was announced at the last club meeting, but is worth repeating in the newsletter. Richard Gretton is responsible for submitting the form which lists the PEEMS Stand exhibits. Any member who wishes to exhibit must let Richard have their name, description of the exhibit, and an estimate of value for insurance purposes, before the end of March. This allows him time to complete the form and submit it to Doncaster before the deadline of April 8th.

Separately, members can submit models for competition, but this should be done individually. Information about entering the competition is at <u>www.thedoncastershow.com</u>

Twelve people so far have shown an interest in exhibiting, and the number of tables available to PEEMS will be similar to last year (around six)

Scarborough North Bay Railway

A visit to the historic Scarborough North Bay Railway has been proposed for the evening of Wednesday the 19th July. The visit will be suitable for families, and it would be good if the train is full. There will be a meal after the ride, and for that reason, numbers will need to be known before July 19th, for catering.



V Twin Crank

PEEMS Model Exhibition At Pickering Station 24th to 28th August. (Thurs-Mon)

PEEMS will be mounting an exhibition of models at Pickering Station over the above dates. This is now a fixed date in the calendar, but arrangements still need to be made. The exhibition will be in same location as before, in the room on Platform 2

The Railway

Some updates :

The railway has an extensive season this year with six outings, and volunteers are required for setting up, running the railway and dismantling.

- 20th to 21st May (Sat/Sun) ~ Levisham Station during their "Behind The Scenes Family Weekend". This event is already featured on the NYMR web site. Help is requested for this event.
- 13th June (Tues) ~ Welburn Hall School
- 24th/25th June (Sat/Sun) ~ Wolds Vintage Rally ~ Fangfoss. This will be the first time at this rally.
- 2nd July (Sun) ~ Malton Show. The railway will be setup on the Saturday afternoon and evening.
- 25th July (Tues) ~ Ryedale Show
- 12th/13th August (Sat/Sun) ~ Driffield Steam Rally. This event is now confirmed for the railway.

We are hoping to make at least £200 from each event, except obviously Welburn Hall School.

"Clock Focus Group"

John Powell is setting up a "Clock Focus Group" for those interested in all aspects of clock construction, repair, tool making and joint projects in the workshop. The dates of Focus Group meetings will be determined later.

Anyone interested should contact John Powell or Richard Gretton at grcgretton@btinternet.com

Contact

If you would like to make a contribution in the Newsletter, the contact is: Nevile Foster Tel 01751 474137 or e-mail <u>nevf123@outlook.com</u>