



Goodwin Park News
Summer 2020

Club Details

The newsletter of Plymouth Miniature Steam. Published quarterly (normally March, June, September & December) and issued free to members. **Cut-off date for submissions is 24th of the preceding month (i.e. Feb, May, Aug & Nov).**

We operate a ground level track of approximately half a mile in length at our site at Pendeen Crescent, Southway, Plymouth, with facilities for 3½, 5 and 7¼ inch gauges. Public running occurs on the first and third Sundays of each month, from April until the end of October.

For further details and membership information, please contact Ian Jefferson (01752-788862) or Rob Hitchcock (01822-852479).

Current Membership Rates - Adult £25, Junior £10.

Workshop facilities available to members at 'Tor Bridge High' (was Estover Community College), Plymouth, £25 per term (10 weeks) or £3 per session.

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We also operate an email message service within the membership; if you wish to join, please contact 'the membership secretary'

Please note that contributions reflect the views of the writer and are not necessarily endorsed by the Company.

Members' advertisements for models and other related items are published free.

Non-members and Trade, by arrangement. All items for inclusion to be sent to the Editor.

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Your committee for 2020

Ian Jefferson	Chairman
Nick Hill	Vice Chairman
Ursula Brown	Secretary
James Atkinson	Treasurer
Selwyn Brown	Track Marshal
Alan Smith	
Bob Sims	
Ti Daley	
Rob Hitchcock	

Please make sure that any change of address, email or mailing preference are notified to the membership secretary promptly in order that we can keep you informed. If you do not wish to receive communication by phone or email, please ask the membership secretary to delete that information.

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Front Cover:

A simple coolant system – photo: Glyn Buttfield (see p16)

Editor’s Ramblings:

Well, I had suggested combining the Summer & Autumn issues as I didn’t expect many articles. However, there is plenty to read about workshop activities!

John’s article on ‘Speeders’ was a result of research following email discussions between Alan Davis & myself.

Thanks to all who contributed & please keep them flowing! Hopefully about outdoor activities too, in due course.

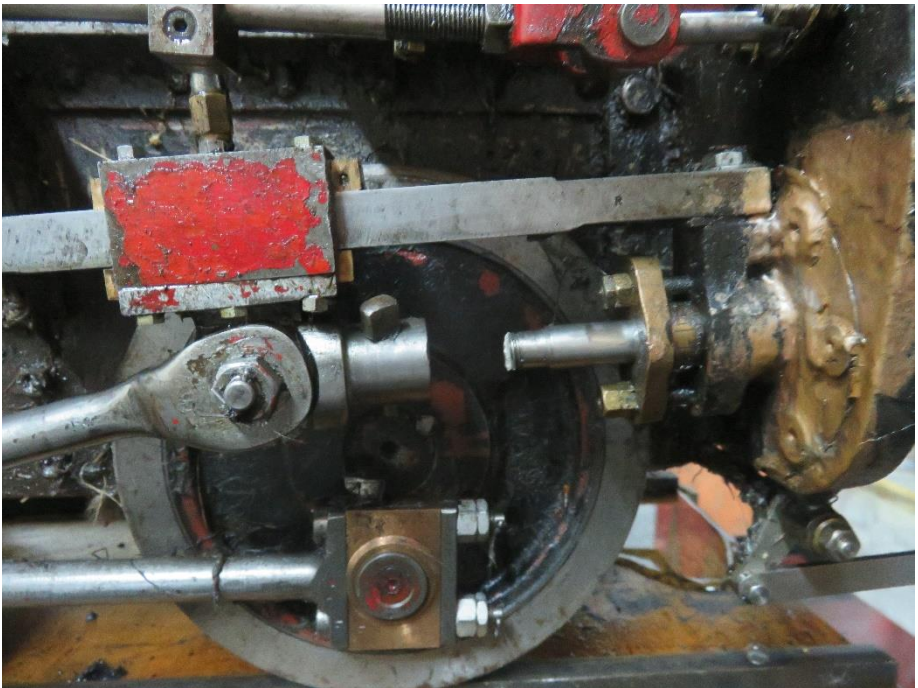
(PS - the photo on page 4 reminded me of the old Kenny Everett joke “. . . piston broke”. Reply: “I know that but what’s wrong with the engine”).

From the Chair

From the Chair

May 2020 and the past 3 months have seen dramatic change and disruption to all of our lives. 3 months ago we were looking forward to another summer and the start of the public running season. Instead, we are now in the middle of one the most disrupted and disturbing periods in living memory. The impact on us is very evident, with all public and private running cancelled until further notice; likewise without access to Torbridge, our Thursday evening sessions are on hold. So here we are, fighting a battle where we can neither see the enemy, nor readily defend ourselves. Thankfully Goodwin Park has remained accessible and we have been able to continue working on site, albeit that we have had to work individually on separate tasks and well distanced. We may not have been able to do as much as we may otherwise have been able to, but we have still done an appreciable number of jobs.

We have tried to keep you updated on this progress over the weeks and perhaps the most visible one is the completion of Hernia's rebuild. A job that has taken 10 months



From the Chair

and amounted to an almost total mechanical rebuild. All that remains, is to complete the annual steam test, running in trials and find out whether the crucial valve timing is correct. Two photographs show the dramatic change.



This is not the only work that has been carried out over the recent weeks, there are many other jobs that have been completed. At the end of March, we still had a number of 'tidy up' jobs remaining from the winter work; these have now been completed as have some additional areas of minor track repair and other items around the clubhouse. As we look to the future, there are still many jobs to be tackled that can be completed under the current restrictions, including some significant repairs to the passenger sets, which after many years of hard work have risen to the level of being essential, I have already made a start on the first one!

As we look to the future, now that some of the restrictions on movement are being eased, I am getting the 'Tuesday gang' back into action at least for grounds maintenance; so, as long as the weather is suitable and you are fit and able, please come along, there is plenty to do as the grass has started to grow rapidly and there are plenty of other jobs as well. I hope to see you soon.

From the Chair

The one big concern that hit me when restrictions came into force, was how it would affect our finances and plans for winter maintenance. I very quickly established that so long as we effectively froze everything, we would survive the year without any income. I even predicted into next year and felt that if necessary, we could just about survive that as well. Obviously the effect of this would be felt in the fabric of the track, stock and clubhouse. Therefore the challenge that will face us in the coming months, is to consider when we may be able to open our doors once again and what controls we may be required to implement in order to comply with the restrictions of the day. However, as the saying goes, every cloud has a silver lining and by a quirk of our organisation and the urgent legislation that has been enacted, we have automatically been gifted a grant of ten thousand pounds from one of the business support funds. This more than covers the loss of income from the current year, but we cannot afford to squander this windfall as it may have to last us for some time. We also have to be mindful that we are not seen to profit from it so we have to be extremely careful in its application.

Having established that the club will survive this virus, we have to look at how the membership is faring and thankfully I have heard of only one member who has fallen victim, I hope you will join me in sending best wishes for recovery. I am sure that there will be many weeks of risk yet to come and I hope you manage to avoid catching it, whether by care or isolation. I can just hope that we all are able to come out of this at some time in the future and get back to the hobby we enjoy. Of course this virus is not the only item concerning the membership, I am sure you are aware that Malcolm has been in hospital for some major surgery, I hear that he is now home and recovering; once again I am sure you will join me in wishing him well for the future.

So what have you been getting up to during the past few weeks? I hope that you have been keeping busy and that we will see the fruits of your labours when we are able to get back together, or even better through these pages. As for myself, as I am sure you appreciate, a significant proportion of my time in recent weeks has been spent reassembling Hernia. I was thankful that I encountered so few problems, but there are always little niggles that occupy disproportionate amounts of time. And there is one that has recently come to light and this affects Fred too, having reprofiled the wheels, the brakes are now on the limit and there is no effective adjustment available within the mechanism, so I am designing a small modification to provide a ready adjustment mechanism and will get it fitted as soon as practicable. Now, my attention is turning to some of the passenger sets; the first on the list has proved to be every bit in need of

From the Chair

attention as was thought. If once the repairs are completed, it will be repainted and should be fit for another period of service. Its partner will be the next, but with potentially another 9 to look at, this could take some time!

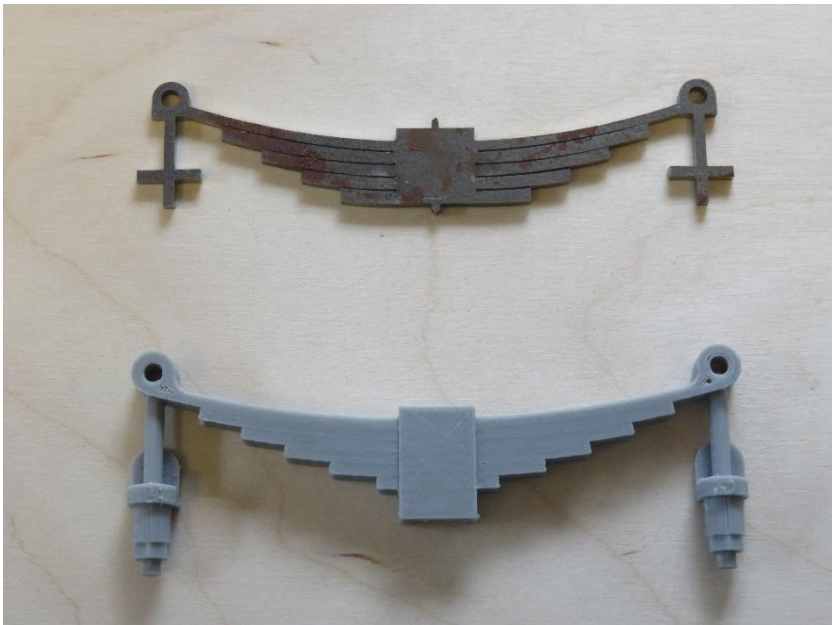
Meanwhile I have managed to find a little time to look at one of my own projects. Some months ago, on a whim, I bought a 17D wagon kit, with a view to doing a bit of 'kit



bashing'. The fit to what I wanted was quite good, but some visual changes were definitely required. Some had been done quite some time ago and it was now ready for assembly. The blurb said that it was intended to be TIG welded, something I had not tried but had everything except a supply of gas, with this sorted some practice pieces were executed with distinctly variable results, but sufficient success to try the real thing. The kit came without instructions and requests for some yielded no response, thankfully the structure was simple enough, as long as I could retain access to joints. The first joints went tolerably well and being 'inside' any poor finish could be dealt with later. The next batch of joints challenged me and proved that TIG is not suitable for use on inside corners! In the end I completed the assembly with a mixture

From the Chair

of TIG, MIG and gas! At least I will not need too much filler before painting. In addition to 'kit bashing' changes, one aspect of the kit that disappointed me was the dummy, laser cut spring that was supplied and I felt that being visible this needed improvement (the real coil spring lies behind the dummy) so I spent several hours designing and finally 3D printing replacement dummy springs. The 3D printing was easy enough, but getting your head around the 3D design was truly challenging, having to break every element down to a 2D geometrical shape and then extruding it in the correct direction. So after about 30 hours of design and 2 hours of printing I had a spring. A couple of tweaks and print a set of 4, I just hope that they do actually fit!



I am still working on this little project and have found that simple jigs can usefully be 3D printed to align non critical parts in the milling machine vice for shaping, ideal where repetition work is required on a set of components. I will be pursuing this project over the coming weeks and hopefully have a final product for the next magazine, unless the world turns upside down for a second time.

On that note, I will simply wish you all a safe and virus free summer. And I hope you are able to make profitable use of this time. Take care!

Hernia Dome

A new steam dome for Hernia

Martin Elver

For some time now, part of the preparation for steaming Fred and Hernia has involved a good polish of all the brass work. That is apart from Hernia, which has an aluminium steam dome. This is instead given a flash over with gold spray paint.

The Club has recently acquired a partly constructed Wren, the parts include a nice example of a brass steam dome. Now obviously a third engine will take some time to finish so why not just borrow the dome for Hernia. A valid argument but like a mountain that just cries out to be conquered, why not have a go at casting one.

Using our newly acquired steam dome as a pattern, our first attempts at mould construction presented several issues. Firstly the inner core would not release, so I needed to generate a slip plane between the sand and the existing dome. Ideas and solutions came to mind like 'let's try and grease the inside'. Unfortunately, sand sticks quite well to grease. Next up: grease proof paper. This gave a small improvement but not a solution and at this point it's looking like our time may be put to better use.



Existing Dome in use as a pattern

During a discussion on a Thursday Engineering evening lan, our club chairman, put forward a theory that steam domes are cast horizontally with a separate core. On close inspection this is borne out by a faint witness of cast lines. These domes are not finish machined, simply filed and polished, hence the evidence is detectable if you know where to look. But to manufacture a separate core would also involve more work than could be justified.

Hernia Dome



Sand box (Drag) with sieved sand ready for compacting, then extending with a second Pair of boxes

The answer to our core problem was a loose sleeve of 1mm polypropylene. This effectively reduced the inner diameter by 2 to 3mm but there are no critical dimensions. Essentially if it looks right, then it is right. We had also been using a set of stacking wooden boxes which, once packed with sand, were proving unmanageable. The answer was to revert to two sets of steel boxes and stake them together using steel rods in the corners. This then gave a respectable depth of sand and a female sand mould of the outside of the dome was quickly produced. Then some decisions to be made. The most vulnerable aspect is the inner core. Do we allow this to stand like a sandcastle and place the female on top and then pour from the top of the dome, or allow the inner core to hang down like a stalactite? Both solutions were tried but we went with a core hanging down, with plenty of steel reinforcement in the form of brazing rods bent into Z sections.

Hernia Dome



Moulds ready to be assembled. Note the empty boxes far left after a failed attempt and remade on the right.

Having mustered quite a lot of scrap brass, we knew the existing dome weighed in at 2.4Kg. A good rule of thumb is to double as this allows for runner and rise and a bit for bad luck, so a crucible load of 6Kg should do it! Our crucible is 1 Litre, which in aluminium gives 2.9Kg and brass around 7Kg.

Ian was good enough to provide Fluxes and degassing compounds so on with the gas.



Just cast still giving off light like a 40W lamp

Hernia Dome

Well almost. Our crucible is designed to tip and pour but the height of the two casting boxes necessitated manufacturing new handles for our crucible, to allow us to first lift and then pour. The steel bar shown on top of the sand box is a precaution to prevent the Cope from floating.

The proof of the pudding is in the eating, or in this case the fettling; but the initial inspection looks as though we might not need gold paint for too much longer.



Cast Dome riser and pourer still attached

Speeders

Speeders and Motor Cars *(USA version of a Wickham Trolley-Ed)*

John Briggs

Railroad speeders, also known as motor cars, were once an integral and important part of railroad maintenance, allowing crews to both inspect their section of railroad as well as transport them to wherever they may be working. After its inception in the late 19th century the speeder would become a staple on railroads and an important tool of maintenance-of-way crews. Over the years the machine advanced technologically but overall it remained a rather simple thing, usually no more than five or ten feet in length and able to carry 2 to 4



passengers powered by a small, lawnmower-like engine. Eventually, the little contraptions were replaced by today's more economical and useful Hyrail trucks. Speeders, however, have not disappeared altogether as many have formed groups and now operate, with permission, trips all across the country along various branches and secondary railroad lines using these unique machines.

Speeders

Today, although there are still holdouts here and there, railroads have abandoned the motor car for the versatility of Hyrails. However, by their very nature speeders have become a very popular hobby and it's not uncommon to see them traveling along tourist lines, abandoned routes (with permission), or [with permission] along short lines. The classic railroad speeders dates back to around 1893 when the Sheffield Velocipede Company developed a primitive gasoline engine motor car (the company, founded by George Sheffield, had originally been in the business of building velocipedes). Just a few years after Sheffield developed its early motor car the company was purchased by Fairbanks-Morse (FM), most famous for its line of diesel locomotives years later.



Like Sheffield's early speeders, FM's designs featured little in the way of amenities outside of its two-stroke, gasoline powered engine. Over the years FM would go on to catalogue a handful of different speeder models, most of which were no more than 5 to 7 feet in length, held

two persons, were open-air designs, and weighed just a few hundred pounds. Only one model, the "No. 16, Type 'C'" actually featured an enclosed cab. Of all the manufacturers which built speeders over the years unquestionably the Fairmont Gas Engine and Railway Motor Car Company was the most successful and well-known. For 80 years between 1911 and 1991 Fairmont built speeders, around 73,000 of them and even today these they can be seen in use, particularly by hobbyists which prefer them over other models.

(Source: www.american-rails.com)

Note: HyRails are vehicles that can travel on road and rail.

Spring Making

*A Spring Makers Tale (Or: b***** that, never again!)*

Tom Pawley

The present stage in the interminable project, one that seems to have occupied most of my adult life and is a 7 1/4" Highlander Black Five, is the tender, which is not to say that the engine is finished, but it's getting close. With the frames built up and fitted with wheels, the next item was the springs. Leaf springs they are, lumpy great things with 22 leaves 3/4" wide and up to 7" long. I had made leaf springs before for the bogie, but they were comparatively genteel by comparison, and were made with spring steel which did not need hardening or tempering, which, sadly, was not the case with the big ones,

Having cut all the leaves, and got into terrible muddles with so many similar size bits, I consulted the books regarding hardening and tempering. In essence, I needed to harden at 740c and quench, then temper at 340c and quench. So, simple it isn't. I tried to do it with a gas blowtorch, but could not get the heating even or the temperature accurate, so ended with leaf springs that closely resembled coil springs, hopeless! Obviously, the temperature is really quite critical, so I reluctantly decided to build a temp controlled muffle furnace and with that finished and working very well, temp controlled within 3c.

I wired the spring packs and treated them as solid blocks, soaking for 45 minutes for the hardening stage and 10 minutes for the tempering. It turned out that 740 was too high , after quenching the first one shattered as I laid it on the bench! The next one hardened at 700c was successful and tempered nicely, a few more sweaty hours saw me with six springs, all more or less the same, and they now adorn the tender chassis, now for another process that I truly detest, sheet metal work, almost as bad as piston rings and tender springs!!! If anyone needs a muffle furnace, you're welcome to borrow mine, I doubt that I will need it all that often unless I completely lose my mind and start to build another loco...

Coolant

A simple coolant System

Glyn Buttfield

I have often in the past had trouble in parting and cutting through large sections of material both in bright steel, brass and bronze and I will not mention stainless. I have never had any problems with my large Colchester lathe as this had automatic coolant and worked like a dream but on my Boxford Lathe it took forever to part off any bar over two inch diameter in steel or in fact any material. I have always used paraffin for machining aluminium by using a paint brush dipped in the same and applied to the job, but this system using coolant becomes very tedious when working with steels.

I considered purchasing a coolant system and found the ones that were on the market were quite large some 16 to 27 litre capacity and for the amount of work that I was now doing would not be cost effective. Also it would have to be fitted permanently to the Boxford Lathe.

I wanted a small unit that I could use on the lathe and also on my powered hacksaw and occasional use on my bench drill and milling machine so I was left with only one option to make my own.

My container was an old plastic 5 litre Dulux Emulsion can and the lid would be used to support the coolant transfer unit via a black steel 1/8" x 2" x 2 1/2" plate secured by two screws and nuts. A circular hole approximately two inch in diameter was cut to allow the unit to receive the coolant fluid back to the container from the catchment trays from the lathe and powered hacksaw, for refilling the container with new coolant and catch any drips from the coolant hose. Two more holes are required one 3/8" for the supply hose from the pump to the transfer unit and one 1/4" for the power supply to the pump. The lid can be removed easily to replace the pump if ever it is found to be necessary.

Coolant

A dc transformer would be required to operate the system. I run my one on an old Scalextric Power Unit with a 13.5v output but any small power unit would do.

The pump is a 12v dc submersible water pump as used in caravans and motorhomes and can be supplied by Caravan Components in Yorkshire. The pump comes fitted with 900mm length of twin core cable.

Arceurotrade can supply coolant accessories like 350mm coolant hose fitted with a round or flat spout and a magnetic base for the transfer unit. I found the switched magnetic base the best option as you can adjust the distance to the work more easily. I had an old magnetic base spare and made up my own transfer unit out of scrap brass bits but Arceurotrade can supply the complete unit.

DRG Tools supply Sarsol Whitewater EP in 1 Litre bottles and it can be diluted to a ratio of 20 to 1 and it will last quite some time before it requires to be changed.

At the time of writing this we are well into the lockdown and we all have time on our hands so we can do all the jobs we should have done ages ago. So if anyone is requiring a coolant system I can assure you all the above suppliers are still open for business.



Wren Cylinders

Replacement cylinders for the Club Wrens

Anon

These are now in production. The photos give some idea of progress.

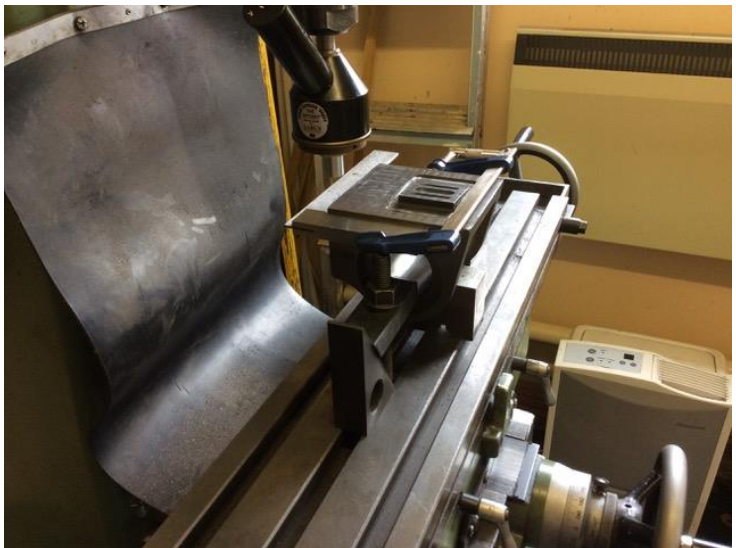


On the inclining table – milling in the port face at 4.5 degrees inclination

Wren Cylinders



Lining up the edge using Optiset with 25x magnification



Lining up the job and the table with set square and Optiset

Wren Cylinders

