



## Southampton Society of Model Engineers Ltd

Club House and Track at Riverside Park , Southampton  
Open on Sunday 1-4pm throughout the summer  
1/5 mile track: 7¼" at ground level , elevated 5" & 3½"  
Continuous runs of approximately two miles on tarmac paths

Volume No 212 February 2015

50+ Members attended the Frostbite Meet: A good day was had by all.



### Favourite Captions

"Hello Ron? Don't issue that boiler certificate just yet: there may be a small problem...."

"Plenty steam, Sahib!"-"Ah yes Gupta, but is it coming out of the right places ?

"Hello caller----- your replacement bus service will be with you shortly !"

"I'd like to report a headless driver on the 11:15 train from .."

"I knew i should have moved when they erected the safety rail"

*and finally*

"Standing on this rail adds real meaning to the Frostbite Meeting!"



## February 2015 Newsletter



### From your Chairman

This period between the end of last season and the start of the next is a bit like the end of term and waiting for exam results. There are but two 'events' to go. One will probably have happened by the time you read this and that will be (was) the last evening meeting when we will hear (or have heard) Graham McKenzie's talk about the Shieldhall story, and then the end of term party itself, the AGM.

Your committee has already marked out the major events for the 2015 summer running season and these attempt to build on last year's successes, and avoid those that were less than successful. We will start with two Charity running days in aid of the Hampshire and IOW Air Ambulance in April and May, very much with the late Ron Bray in mind, as this was his charity of choice. The Summer Fest will be in July as will the Playlink Day, then we will have two 'special days': one at the beginning of August for 3½" locos and then a 'Singles' day at the end.

Both of these have caught the imagination of the members of other clubs as well as catching the enthusiasm of our membership.

As usual and 'of course' etc etc, the success of these events depends on the support and participation of the membership. I might add for those who missed the comments in the committee meeting minutes, we will be consciously and formally opening the track on the first Saturday of the month for a members only play and experimenting session. We will try this, if it works, great, if there is no interest so be it.

But in having a slight review of the past as well as looking forward this is an ideal time to thank those members who have given their all to keeping our Society alive, vibrant and friendly. Naming all sounds a bit like the Oscars but I would like to mention some of the unsung heroes behind the scenes. Peter Cleare has tackled the website with verve and put us on the map. I have had a lot of positive comments; we have 'arrived' at last. Ron B keeps the boiler testing regime on track. John Barrett has stepped



## February 2015 Newsletter



in as Secretary and this is most welcome, thanks John. Chris and Sue are just there when needed and Sue is an excellent track marshal (or is it Marschallin)! The Committee have worked hard this year and sorted out a few historical problems. Thanks John G for your membership efforts and all that electrical stuff. Bill too for keeping the station efficient. The rest of the Committee, each in their own way have worked tirelessly, Jerry keeping order, Mike keeping track of the money, Dave keeping the vegetation at bay, Ron (Little) keeping us refreshed and fed and finally Janie for pitching in where needed. The Wednesday morning group keeps the club alive, does the maintenance & grounds upkeep, and is a great forum to welcome new members (or even returning existing members). I am sure I have missed some one, my apologies but I cannot end without thanking Jerry once more for his levelling sense of what is right and proper.

I suppose now I can come around to a comment or two about participation and even raise a little controversy! Our club survives on the efforts of members. Those of us who support and work at Riverside (Sun)day in and (Sun)day out are a happy band of brothers and sisters and several returning members have remarked about the friendly atmosphere. I do appreciate that we all have busy lives but the odd day here and there would make a tremendous difference. This is after all your club and your opportunity to make a difference!

Which in some respects brings us back to where I started. The AGM this year will be short and business like as AGMs are and should be. This means we have an opportunity to do two things. First is to have a 'bits and pieces' auction after the meeting. Second or perhaps even first, I personally think this is an ideal time for your committee to listen to what you want from the Society. The only way you can enjoy your Society is if it does what you want and having elected (or joined) the committee, they need to hear your voice. Come and talk with us! See you at the AGM!

**David**



## February 2015 Newsletter



### ***And from Your Secretary***

Two gentle reminders for those who qualify!

**The first** is to ask for your completed AGM Nomination/Proposal forms as I haven't received any as yet. There is a folder in the Clubhouse set aside for them. Remember the USA maxim: *No taxation without representation!*

**Secondly**, John Gardner has asked me to remind those folks (28 at time of writing) who haven't got around to renewing their membership yet. Of course, I realise that paying up at 'Frostbite' was only a tradition, and not a requirement, but the Society year ends on 31st March and subs must be paid by then to keep your



membership active. Thanks.

**John**

**Some Photos from the  
Frostbite Meeting**



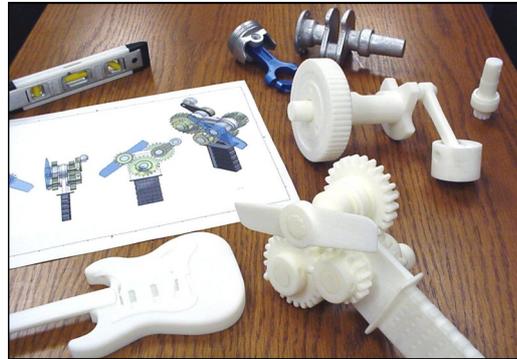


### Model Engineer's Exhibition, Sandown Park. 11,12,13 Dec.

Your Editor went along to the exhibition, together with my nearly finished Britannia resplendent in grey primer, and I was quite impressed with the quantity and quality of the models on show, together with the number of people of a certain age (sorry Jerry!) who managed to attend. The organisation and stewardship was, however, another matter, but this is sadly prevalent on this site. I took lots of pictures of the exhibits, and a sample is shown later, but I thought it would be more interesting to highlight and comment on two ME aspects that are somewhat removed from our more traditional approach. By this I mean 3D Printing and Model Gas Turbines.

#### 3D Printing

There was a 'Makers' section at the show, set aside in its own large room, and it was populated by various 'Hi-Tech' people and their associated machines. I was immediately drawn to the 3D printers as I hadn't seen one before. I have to say that it was entirely fascinating and absorbing to watch one in action, even though it was just producing a large green frog!



3D printing or additive manufacturing is a process of making three dimensional solid objects from a digital file. The creation of a 3D printed object is achieved using additive processes. In an additive process an object is created by laying down successive layers of material until the entire object is created. Each of these layers can be seen as a thinly sliced horizontal cross-section of the eventual object.

It all starts with making a virtual design of the object you want to create. This virtual design is made in a CAD file using a 3D modelling program (for the creation of a totally new object) or with the use of a 3D scanner

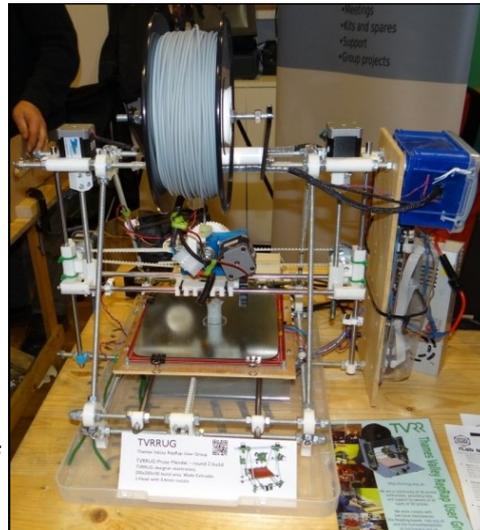


## February 2015 Newsletter



(to copy an existing object). This scanner makes a 3D digital copy of an object and puts it into a 3D modelling program.

To prepare the digital file created in a 3D modelling program for printing, the software slices the final model into hundreds or thousands of horizontal layers. When this prepared file is uploaded in the 3D printer, the printer creates the object layer by layer. The 3D printer reads every slice (or 2D image) and proceeds to create the object blending each layer together with no sign of the layering visible, resulting in one three dimensional object. The slice height on these amateur - and therefore cheap - machines is usually 0.2-0.3mm, the smaller figure – and careful selection of nozzle size - providing a better surface finish. Most of the pieces I looked at could have been used for casting patterns without any fettling or retouching. Indeed I saw Stirling Single wheel castings made from these patterns and the results didn't need fettling either. I know for sure that if I'd had one of these when I was once responsible for an injection moulding tool room producing a lot of one-off samples, then at least one of the blokes would have been redundant!



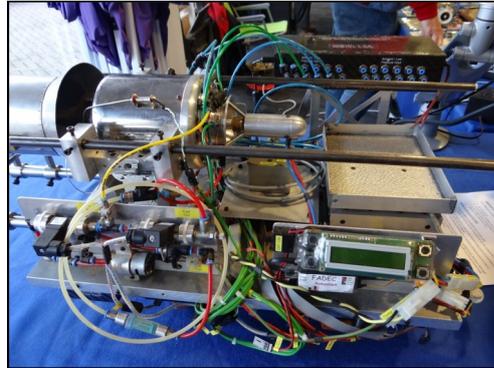
The machine in the picture costs around £450, and I saw another similar one at £1200, but I was reliably assured that any model engineer worth his/her salt could make one for around £100, which is the amount needed for the dispenser head, stepper motors and control unit. The material on the reel is a special plastic, and it costs about £30 for a full reel, although lesser quantities can be purchased. A large green frog costs about £4 and takes about ten hours to build up. A plastic/bronze mix can be purchased, though quite expensive, but the surface can be polished. I asked the man about using a silver mix and firing the object in my pottery kiln to



produce jewellery. His eyes lit up so I may have given him a good marketing idea!

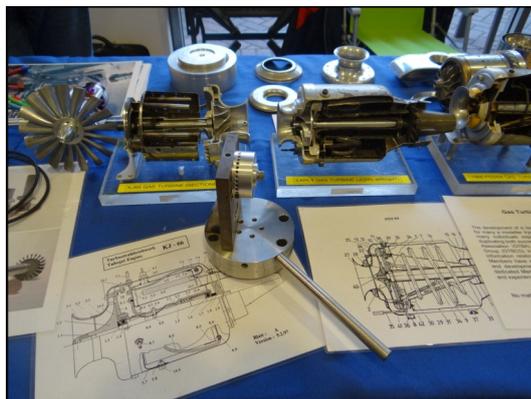
### Gas Turbines

I was so fired up after seeing these jet engines in the flesh, pun intended, and listening to the wonderful noise they made at 122,000 rpm that I immediately joined the GBTA: (Gas Turbine Builders Association: [www.gtba.co.uk](http://www.gtba.co.uk) and started thinking about a suitable project.



There are plenty of videos online showing amazing aircraft in flight, but most of them sport proprietary engines at £2000 a pop. However, any one of us could make one for about £400, provided they are prepared to mill out the compressor blades, a task that is easier than one would think provided the right fixture is constructed. The one in the picture is the brainchild of the Chairman of the GBTA, and he showed me the proof that a fan blade was machined on his Myford using a 6mm end mill and a vertical slide! As the operating temperatures are quite high, ceramic ball bearings are needed - £50 each!

I would like to build one and put it into an MTB that I've had in my mind for some time. In fact, I acquired a 4' long hull mould some years ago with this intent, and I dug it out yesterday from behind my workshop. I'd never examined it closely before, and after Hoovering out the leaves and mice droppings I was pleasantly surprised to find that there was a perfect hull moulding already in it,, not spotted on purchase! *Watch this space...*





## Do we need softened water at the track?

Yours truly was asked to investigate, along with Mike Sanderman, the feasibility of installing a water softener in the Clubhouse. We are in a hard water area: 107 Cal mg/l. and this facility could well be a useful addition. The softener would cost around £500, plus installation and distribution costs. However, there are a number of questions to be answered before such an expenditure. I did some research on the net—it's not really plagiarism— and here are some of the comments made by some hard boiled users!

John

### Commercial Softener

*The problem with one of these is that the water needs to be treated when we want it—short periods of high demand— which is incompatible with the design of domestic softeners. Worthing SME installed one and had a bad experience. The first weekend was great, but the following weekend a member filled his boiler, raised pressure, opened the regulator and emptied the boiler up the chimney in less than one minute! The fire was dropped straight away. With the unit standing idle for one week, the total dissolved solids in the water was so high that all the water surface tension was lost, resulting in complete priming.*

### Distilled Water

*For a miniature boiler it follows that distilled water would be better than hard tap water. The question I have to ask is why this has been proposed in the club? Is it a hard water area? Are boilers having to be cleaned out more than once a year? Do boilers prime regularly? If there isn't a problem as such then why bother?*

However!

*Many boilers don't need distilled water. Traction engines and locomotives would operate on river water / town water / rain water quite happily. Regular washouts and cleaning would keep the totally dissolved solids to an acceptable level to avoid priming. However, if anything other than distilled water was used in high pressure boilers then scale formation would result in failures.*



### **Rain Water**

*Rain water is ideal for boilers; it is effectively distilled water and available in abundant quantities! It is soft water - i.e. exactly what is being sought by adding water softener to hard water. It should be used more often for boilers. It is not significantly acidic unless you live under highly acidic clouds (i.e. extreme pollution). The only slight acid content which has no detrimental effect to boilers is due to dissolved carbon dioxide which in any case escapes as gas as soon as the water boils.*

However!

*We considered using rain water so we had some analysed. It was before my time but I believe it was found to be so acidic that it was more useful as a pickle.*

*Rain water is a very long way away from distilled water in almost every measure you choose to measure. There seems to be a misconception that it's pure because it's evaporated, but in fact it scrubs all the impurities in the atmosphere and brings them to earth. Those include solid and organic matter. It may be lower in chalky deposits and as such might be more suitable than tap water in hard water areas, but close to being Distilled it certainly isn't.*

### **Differing Softening Regimes**

*The problem of softening water at a local level is that if a loco from a non treated site visits your site. I have had the problem of going from a hard water area to soft water area. After an afternoon with the engine in steam all sorts of things started to happen: water feed problems sight glass readings going everywhere when the safety valves lifted. This was traced to the boiler being descaled by the softer water. I have come across this problem on three tracks in different areas of the country.*

And

*I would suggest that it is more important to keep a log of the number of hours that the boiler is steamed for and treat it as required. Someone who steams every weekend in a hard water area is going to need a different regime to that of someone who only steam say three or four times a year. I hesitate to say it but if you don't know how to*



## February 2015 Newsletter



*look after your boiler should you be playing with steam engines at all. Just put that in to be controversial. Happy steaming to you all.*

### **Citric Acid**

*The average mainline engine will lose more water from a safety valve in one minute than the average model will use in a month of hard working. The point of my previous post is that it is a problem only due to the hours that the boiler is in steam. A cheap supply of citric acid will de scale any model boiler I have ever come across. It will not cause any priming if washed out properly after the treatment. You can safely de scale a boiler three or four times a year using this method. I believe that the royal navy used to leave boilers water wedged 'full to the brim' so as not to induce fresh water with an oxygen content into the system. In modelling terms the acid caused by the combustion of coal is probably a bigger problem as it eats the silver solder at an alarming rate. I have had to scrap two boilers of less than five years old because of this. Strangely both were professional boilers built with non cadmium silver solder. I simply think water treatment is probably not worth the worry in models if they are properly maintained*

### **Calgon**

*You have to have a water treatment regime that isn't going to cause priming in the boiler. this isn't a problem in domestic kettles etc with well known brands of domestic descaler but would need careful investigation on a miniature loco boiler. even if the priming isn't enough to cause 'carry over' to the cylinders, just a small amount of priming will render the gauge glass readings totally useless. Calgon can cause this, and at a high enough steam temperature will separate out and adhere to the injector cones.*

### **Sequestric Acid Disodium Salts (SADS)**

*Prior to going into steam some 10cc of saturated solution was put into the tender water for each expected two hours running. This method caused no priming or injector fouling, and during subsequent annual overhauls the blowdown valves, which remained quite free, have been removed and the water space found to be quite clean except for a light grey film of loose powdered sludge, which could be washed away with cold water.*



## February 2015 Newsletter



### Conclusion

We have concluded that, besides the not inconsiderable expense, the commercial softener would not meet all of our needs, and we should consider some sort of chemical pre-treatment such as SADS. David and Jerry are already taking this approach, using Heritage Steam water treatment, and they have found it to be quite effective. In fact, one of them is willing to 'donate' half of their supply to the club, something that we could perhaps auction off at the AGM!

If you get the opportunity, please tell us what you think about this fascinating subject.

Thanks

**John & Mike**



## **February 2015 Newsletter**

