



OFFCUTS



Newsletter of the Bromsgrove Society
of Model Engineers

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BSME TO HOST IMLEC

What can you do to make this international event, being held at *our* club this July, a success?

Well chaps, it's under way. As you read this the following milestones have been reached. Enquiries for competition entries are in double figures and rising. The organising group has visited the Bristol Club to get some first hand info on the event. An article has been prepared for inclusion in *Model Engineer*. Avoncroft have given permission for us to use the camp site and the overspill car park for tents and caravans. We have negotiated half price admission to the Museum for our visitors. We have organised the loan of tents for the event.

July 16th/17th may seem a long way off, but there are plenty of tasks to do. The following need completing before the end of June. Paint the clubhouse both inside and out. Paint the bridge.

Finish laying stone on the roadway. Tidy up around the van body and paint it. Paint the steaming bay roof surround and tidy up the bays. Paint the benches. Check out the whole track and make any adjustments. Overhaul all the semaphore signals. Clean down the station paint work. Service the traversers and loco lifters. Plant up the flower beds.

In the week prior to the do we need to mow all the grass, maybe including the camp site, and strim all the bits and bobs. On the Friday 15th we need a gang to erect the tents, gazebos etc., and no doubt catch up on the things we have forgotten!

So chaps, as you can see from the list there is something that every member can help with. Please don't wait to be asked, step forward and volunteer. Speak to John Spooner or Phil Lamb to register.

If any BSME member is interested in competing in IMLEC, they should contact Pete Maybury as soon as possible for more details.

Two final requests.

Firstly we need to borrow your plastic patio chairs for the event. Put your name under the seat and bring them down on the Saturday morning.

Secondly, we need your flowers in pots, troughs etc., so get planting now!

The IMLEC organising group.

IMLEC is short for The Model Engineer International Model Locomotive Efficiency Competition. (ed)



Bournemouth hosted IMLEC in 2010. Alan said that he and Jean were rushed off their feet keeping everything running smoothly!

Graham's steam car Part 2

The two directors of Steam Traction World decided to repeat the run in a Lykamobile. This time it was not the result of a wager but to raise money for Hearing Dogs for the Deaf. The car had been fitted with improved engine parts, twin mechanical lubricators, Pyrene fire extinguisher, Lucas "King of the Road" oil lamps converted to multi-LEDs, rear and brake lights and an improved the Riello burner. The car had no problems and completed the 1072 miles from John o' Groats to Land's End, being featured in numerous newspaper articles and radio features, raising £10,000 for the charity. Following the run it

was overhauled and then offered for sale. In addition it served as the prototype for the 10 kits that Steam Traction World is producing.

The advert was the one I saw and Graham C and I went to Daventry to view it and both have a test drive. The car impressed both of us and so I completed the deal and the car was duly delivered.

We then set about making changes and improvements. A new



patent leather dashboard was purchased from the US and fitted replacing the non-prototypical wooden dash. Keith Bucklitch helped in producing a new bracket for the steam

gauge and speedo. The graphics of the sponsors for the journey were removed and the signs on the sides will be repainted by Bob Harbon and throughout Graham C has been my constant co-conspirator and help. We had fun locating a bulb horn, Powell and a Hamner (Birmingham) 1900 oil headlamp, and a Blackcountry firm to roll some mudguards. In addition Nancy kindly stitched the leather engine compartment cover. However, over the winter it all began to come together

The car is a pleasure to drive. It has a foot throttle and foot brake working hydraulic discs on all four wheels as well as a handbrake. There is a hand pump and mechanical pump with bypass. The

water tank holds 10 gallons with an auxiliary tank we fitted holding a further 7 gallons (the water consumption is 1 gallon per mile). The burner is fired using diesel fuel and has a pressure sensor on the boiler cutting the burner off at 250 lbs per square inch and cutting back in at 180 lbs per square inch. The boiler is



a water tube boiler of the Derr or Winslow type. All the boiler and burner and fuel tank information is fed back to the driver electronically and the same electronics carry out of the automatic control.

Interestingly the Locomobile is the same size as a Smart, so it's easy to purchase a cover and trailer. We intend to drive to the club (17 miles away) with refills for water and something liquid for us en route! In addition we hope to trail it to Steam Car Club (GB) rallies in various locations.

Thoughts on Power by John Hurdley

With IMLEC holding its competition at our club, thoughts naturally turn to locomotive power outputs. We have an incline of 1:100 which means that the drawbar pull required to move a train up it at a steady speed is 1% of the train weight ignoring the rolling resistance, which with our trolleys is very low (so low that I could not measure it). A train weight of 1000lbs thus requires a drawbar pull of 10lbs to maintain a steady speed and the power needed at 6 mph is 0.16 horsepower or about 0.12 kilowatts. IMLEC has been running for many years and its aim is to establish the thermal efficiency of model steam locomotives, i.e. the power you get from a given amount of coal. Results are usually round about 2% and once or twice an exceptional combination of loco and driver has achieved 3%. To get 0.12kW at the drawbar with 2.5% thermal efficiency means the firebox must produce 4.8 kW (0.12×40); that is the output of a 5 bar electric fire. For a few square inches of grate to produce so much heat seemed so improbable that I discussed it with various people and reworked the sums but I can find no error. I would be grateful if somebody could find the missing decimal point. I have ignored the power required to move the locomotive itself as this is difficult to quantify but means that an even higher figure for combustion rate is needed. No wonder we run out of steam on the Big Hill if the fire is not in really good shape!

There's no missing decimal point, John. John Pagett agrees with your results and adds:-

I haven't worked through the calculation of what hp equates to 6mph and 10lbf of tractive effort, but it sounds about right.

Somewhere I've seen figures for the power developed in terms of burning coal in our little boilers and the figures are very similar to John's. I think it was a spreadsheet from Professor W (Bill) Hall, but I can't find it on the internet at the moment. I think I've seen about 6kW for a Sweet Pea boiler and around 4kW for a Small Metro. I have no difficulty accepting his 5kW figure.

Boiler efficiency is usually quite good, in the eighty percent range, so it's cylinder efficiency which is the real drag for our locos.

What happens is that steam condenses on the cylinder walls at the start of the stroke when the steam is at high pressure, then evaporates towards the end of the stroke as the pressure falls. The point is that this steam can't perform any useful work while it's still water. Also the water has to re-evaporate towards the end of the stroke to cool the cylinder as much as it heated it up when it condensed, otherwise the cylinder would get very hot very quickly, since a large number of watts are available in the steam flow.

See also a comprehensive article at www.btinternet.com/~peter.j.jarman/imlec2005/html/history_of_imlec.HTM

Noticeboard

At our three GTGs the committee suggest that it would be helpful if members with *nothing to unload* park **outside** our field, but in any case do not park on the gravel driveway.

Please find enclosed a form for ordering Club garments in this year's colour - **Royal blue**. Keith says time is of the essence so get your orders in asap and in any case no later than the 27th March.

Keith is also ordering some miniature pressure gauges. Please let him know your requirements.

Reg thought members may be interested in the following excerpt from 'The Railway Builders' by Anthony Burton.

In the very early days of railways, when engineers had few precise rules and were 'feeling their way', attempts to be precise did not always have the intended results.

Captain Transom, the engineer had decreed that, 'No broken stone used for ballasting should be bigger than that which a man could hold in his mouth.

On visiting the works with the contractor he found their steps dogged by a shambling ugly man with an enormous head. The engineer demanded to know who he was.

"Oh him?" said the layer of public way, with grave designation of the obnoxious attendant with his thumb: "You mean him? You see Captain Transom, that is my Ballast Gauge".

The station environment has been tidied up with new areas of



concrete replacing muddy grass. The platform has been lengthened and the edges painted yellow. Phil's car was recently seen standing near the station. I hope he wasn't booked for illegal parking!

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