

## **SMEE Lectures and other activities at The Model Engineer Exhibition 2009**

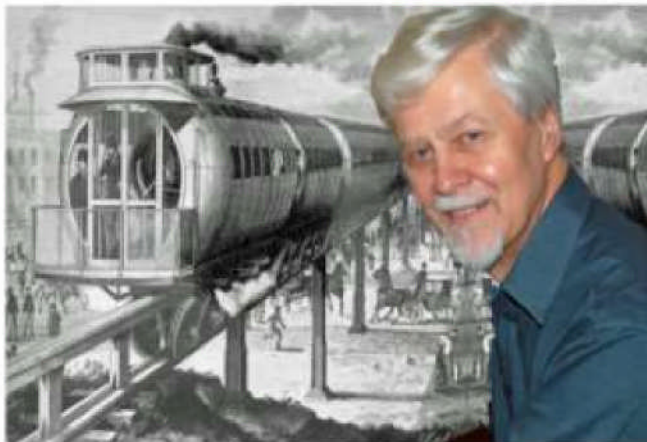
### **Prepared by Stuart Walker**

Traditionally, SMEE has organised a series of well structured but informal lectures on a wide range of subjects by some of the leading names in the world of model engineering and I'm sure you won't be disappointed by what's on offer at this year's exhibition. As in the case of the last two years, eight lectures a day are to be presented in two separate well appointed rooms where you will be able sit back and enjoy the talks and have an opportunity to take part in a question and answer session at the end.

The purpose of this advance publicity is to enable you to better plan your visit. I have tried when putting the attached program together to avoid clashes of interest, but as you will appreciate it's impossible to please everyone and you may need to use it as an excuse to spend that extra day enjoying the exhibition.

In the order in which they appear on the attached program, allow me to introduce the speakers and outline their subject matter:

### **The diversity of 19<sup>th</sup> century monorails: An inspiration for future models? By Adrian Garner**

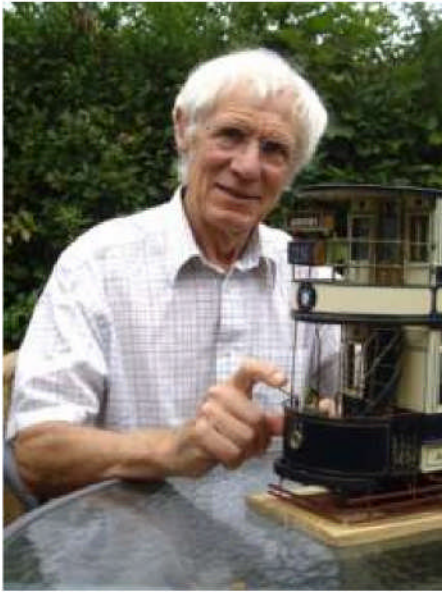


Adrian is an accomplished model engineer and author of a number of articles, as well as a book to be published on these unusual forms of transport. He has been collecting information on these unique railway systems from numerous sources for more than forty years and the model he made in 1975 of the Lartigue monorail which ran near Westminster can be seen on the SMEE stand.

Adrian's talk will provide you with a unique insight into the successes and failures of the various systems constructed, as well as some of the more bizarre ideas for monorail transport that luckily never made it past the drawing board. The rather strange monorail machine depicted in the illustration was the brainchild of Captain Meigs and might have run above the streets in Boston, USA. Whilst both the locomotive and carriages were constructed and ran on a short demonstration line, surprisingly politics rather than practical realities sealed its fate and it wasn't long before the scrap men had their way.

Monorails were not, however, limited to steam. Electric powered monorails were also built to "bicycle" on one rail and in the USA a system of monorail pedal cycles was used as a commuter service from a town to the nearby factory. Even a monorail with a hydrogen filled balloon to lift a vehicle up a mountain was tried in Germany.

## Tramcar Modelling in the Larger Scales by Ashley Best



Many of you will recognise Ashley as a model engineer with a passion for trams from the excellent series of articles recently published in ME, as well as his description of his well ordered workshop in the latest MEW special publication. He's not only a gifted Gold Medal winning model maker, but also a talented painter able to express the atmosphere of the early tramways and depict his favourite trams working within the bustling street scenes of their heyday.

Ashley's talk will provide you with a brief history of tramways and tramcars in Britain with some personal recollections which formed the source of his passion and inspiration. In particular, he'll focus on his "Manchester Project" and how his model-making and artwork/paintings developed in parallel. He will be bringing to the exhibition both paintings and models for display and competition, and use his talk to explain how they came about and something of the design and construction challenges. From his presentation you'll be able to appreciate how he has cleverly resolved these issues to produce authentic working models that not only look right but also depict the feeling and atmosphere of the full size.

Whether you're an aspiring tram modeler or a model engineer fascinated by perfection, I feel sure that after Ashley's presentation you'll have gained a much clearer insight into the skill and dedication that he applies to his craft.

## Modern Adhesives and Paints by Norman Billingham



Norman is Emeritus Professor of Polymer Chemistry in the Department of Chemistry and Biochemistry at the University of Sussex. He is also a down to earth accomplished model engineer with a natural gift of clear thinking and well practiced in the art of good communications.

Over the last half century there have been massive changes in the technology of adhesives, which have impacted all aspects of engineering. In areas as varied as aerospace, automotive and railway engineering, mechanical fasteners and welding have been replaced with adhesives. Many parts of modern cars, planes and trains are now glued together offering advantages in speed of production, lower weight and better stress distribution.

These technologies are also applicable to model engineering – we now have a huge variety of adhesives which were not available to previous generations. However, they can be very confusing. Faced with the huge range of different types, anaerobic, polyurethanes, epoxies, superglues etc., how do we know what to choose and how to use it?

The same is true of paint technology, which has many similarities to adhesives. Where previous generations had a rather limited choice of paints, we now have a vast range of different types, cellulose, acrylics, epoxies, polyesters etc. What can they all do and how should they be used?

Norman's talk will guide you through the fundamentals of paint and adhesive technology and explain their applicability to model engineering.

## **Mastering the challenges of lining and lettering models by Chris Vine**



Two years ago Chris joined us at Ascot and provided us with an exceptionally well received talk on the trials and tribulations of painting his much admired gold medal winning 7 1/4 inch gauge locomotive "Bongo", and this year he will be back with "Bongo" to tell us about what he went through to master the art of lining and lettering. Many of you may have been inspired by both his talk and his very practical and well illustrated book "How (not) to paint a locomotive". His original talk focused mainly on the paint and painting techniques that he experimented with and used. There was insufficient time to do justice to the research, trials and tribulations he went through to master the art of effective lining and lettering on his locomotive.

Even if you have read Chris's book, his talk should help boost your confidence and provide the necessary determination needed to master the art and avoid the many pitfalls. As Chris will be bringing "Bongo" along to the exhibition you'll not only have an opportunity to hear what he has to say, you'll also be able to see for yourself and appreciate the difference that determined patience and perseverance can make to a well made model. I'm sure many of you with children to find Christmas presents for will be pleased to hear that Chris will also be promoting his new Peter's Railway books at the exhibition.

## The Evolution of the Radial Aircraft Engine by Mike Tull



Those who regularly visit the IC Engine Group's stand will, I'm sure, recognise Mike and his beautifully made IC engine models and will not be surprised to learn that as well as being a very accomplished model engineer, he has also enjoyed a successful career as a Systems Engineer in the defence industry.

Radial aircraft engines have always fascinated him and some ten years ago he decided to research and build not just one, but two 1:4 scale Bristol Mercury engines from original works drawings.

Mike's presentation will briefly take you through the history of the radial engine and explores the major challenges faced by those early day pioneering engineers who developed the designs. These designers constantly had to break new ground but had little or no experience to fall back on. They were truly at the forefront of the technology, having to satisfy the ever increasing demands for more and more power and greater and greater reliability. In just forty years the radial engine grew from the 50hp Gnome rotary to the mighty and massively complex 3500hp P&W R-4360 Wasp Major Corncob with its 28 cylinders set out in four banks.

The second part of his talk concentrates on the very real challenges he faced in modelling his 1:4 scale model of the Bristol Mercury 9 cylinder radial engine which will include, amongst other parts, the manufacture of the cylinder heads, crankcase, crankshaft, con rods and the supercharger.

Mike's presentation will, I'm sure, provide you with a real appreciation of the highly skilled and demanding effort that goes into these magnificent models. As a little light relief, take a look at Mike's 1:6 scale radio controlled M5 Stuart tank fitted with an authentic radial engine to be found on the IC Engine Group's stand along with other brilliant examples of wonderful engines!

## Miniature Gas Turbines and Locomotives by James Hill, Jerry Burchell and Tim Coles



These three enthusiasts are active and keen members of the Gas Turbine Builders Association and will be explaining the modern developments and personal dedication that have gone into these small, very powerful, now reliable power packs and how the challenge of using them in model railway locomotives is being pioneered.

Association chairman and technical wizard James Hill will start the presentation by outlining the development history of the

miniature gas turbine by providing us with a brief overview of the theory and safe operation of these incredible machines. Their performance characteristics are quite astounding and you'll be able to gain real insight from James into some of the complexities of designing what is otherwise a remarkably simple machine.

Gas turbines have been used to power full size railway locomotives and three experimental prototypes were built for use in the UK. Tim Coles has successfully completed and run a 5in gauge model of one of these, the English Electric GT3 locomotive, which is believed to be a world first! Jerry Burchell is building a 5in gauge model of the British Railways (Western Region) gas-turbine-electric locomotive No. 18100. Tim and Jerry will be making a joint presentation covering a brief history of these two prototype projects and will describe some of the processes and challenges of researching, designing and building these two unique models.

After the presentation you'll not only have a greater appreciation of the static displays on the Association's stand but also, weather permitting, be able to enjoy an outside working demonstration.

## Making your own Spark Erosion Machines by Mike Kapp and Alan Wragg



Those visiting last year's SMEE stand will most likely remember both Mike and Alan demonstrating and chatting about their elegantly designed and well built spark eroding machine, which had an impressive performance. Mike and Alan are neighbours and have worked together by pooling their complementary skills over many years on several award winning projects.

In essence Mike is the electronics wizard and Alan works his mechanical magic. It was Maurice Flagg's brilliantly simple scrap box sourced erosion machine which inspired Mike and Alan's 2008 machine. Although this was faster and cleaner, it couldn't meet the performance of commercial machines. Striving for better performance Mike and Alan decided to see if it was possible to design and build a machine that worked on the same principle as commercial machines, but could be constructed by model engineers.

The first part of the presentation will enable you to understand the basics and help you appreciate what has been achieved through design development in both industry and home workshops equivalents.

The second part of the presentation will provide you with details of how Mike and Alan set about designing, constructing and proving their latest machine which you'll find exhibited on the SMEE stand and being regularly demonstrated.

## **Sharpening lathe tools that really cut! By Mike Chrisp**

A lecturer and instructor in mechanical and production engineering for many years before "retiring" to take up a position as Technical Editor with *Model Engineer* magazine and later becoming Editor, Mike knows what it takes to produce accurate components to a high quality finish on materials encountered by model engineers in their own workshops. An active model engineer with several projects completed and many in hand, Mike's involved with the SMEE team who currently deliver successful and popular in-house training courses, including a one-day session for members dealing Specifically with tool sharpening.



Aware that many consider tool grinding to be a "black art" and have opted for inserted tip carbide and other tooling to avoid the need to maintain their cutting edges, Mike will guide you through the fundamental geometry of traditional high speed steel lathe tools. There will be simple explanations of how the necessary angles affect the operation of the tooling and

how they can be obtained using a basic offhand grinding machine, as commonly available to model engineers from many modern suppliers.

By the end of the presentation you may wonder why you ever thought sharp tools were difficult to maintain, and will return to your own workshop with an understanding that will result in your ability to prepare lathe tools to cut right first time, every time.

## **SMEE Daily Lectures**

### **Room No 1**

- 11.00 - 11.50      The diversity of 19<sup>th</sup> century monorails: An inspiration for future models?  
by Adrian Garner
- 12.30 - 1.20        Tramcar Modelling in the Larger Scales  
by Ashley Best
- 1.30 – 2.20        Modern Adhesives and Paints  
by Norman Billingham
- 2.30 – 3.20        Mastering the challenges of lining and lettering models  
by Chris Vine

### **Room No 2**

- 11.00 - 11.50      The Evolution of the Radial Aircraft Engine  
by Mike Tull
- 12.30 - 1.20        Miniature Gas Turbines and Locomotives  
by James Hill, Jerry Burchell and Tim Coles
- 1.30 – 2.20        Making your own Spark Erosion Machines  
by Mike Kapp and Alan Wragg
- 2.30 – 3.20        Sharpening lathe tools that really cut  
by Mike Chrisp

## **SMEE Daily Workshop Demonstrations**

### **Morning**

- 10.30 - 10.55      Making small steam injectors  
by Derek Brown
- 11.00 - 11.25      Thread cutting on the lathe  
by Tony Phillips
- 11.30 – 11.50      Forming copper to make a model Bentley radiator shell  
by Mike Sayers
- 12.00 – 12.25      Making steam whistles  
by Derek Brown

12.30 – 12.55 Tool grinding using air bearings  
by Paul Gammon

1.00 – 1.25 Soft soldering techniques  
by Jim Lugsden

### **Afternoon**

1.30 – 1.55 Making small steam injectors  
by Derek Brown

2.00 – 2.25 Thread cutting on the lathe  
by Tony Phillips

2.30 – 2.55 Forming copper to make a model Bentley radiator shell  
by Mike Sayers

3.00 – 3.25 Making steam whistles  
by Derek Brown

3.30 – 3.55 Tool grinding using air bearings  
by Paul Gammon

4.00 – 4.25 Soft soldering techniques  
by Jim Lugsden

**Note:** The full program will only be available on Friday and Saturday. To accommodate the prize giving on Sunday, only the morning demonstrations will take place.

## **The SMEE General Stand - Demonstrations and displays**

As well as the Lectures and Workshop Demonstrations, SMEE will also be welcoming both new and old friends to busy stands where visitors will be able to enjoy and join in a series of activities which include:

Locomotive displays and Loco Builders Clinic together with live steam testing of injectors, ejectors, vacuum brake systems and whistles. Views will also be sought from those interested in building small steam injectors to see if it would be appropriate to organise a competition next year.

Workshop optical aids display and advice to help model engineers choose appropriate equipment to overcome the difficulties of seeing what's really happening where access is difficult, as well as coping with poor vision.

Stationary engine displays and Builders Clinic to provide general design and build advice on a range of engine types.

Spark Eroding Machine display and demonstrations to support the Lecture which explains the theory and practice of building and using spark eroders for particular needs.

Traditional building display and demonstrations of the techniques used for building with miniature clay bricks and tiles.

Small workshop tooling display which will focus on those useful tools that Members have made in their own workshops for particular applications, including the simple lathe turning tools that will feature in the tool grinding lecture, as well as the flexibly supported high speed parting-off tool.

A display of various models which will include one of last year's gold medal winning trams and an unusual monorail train, both of which will feature in their respective lectures, as well as an assortment of new and interesting engines.

A bookbinding display that features a simple homemade press and offers a solution to repairing old books and organising those back copies of your favourite magazines.

The SMEE Training display which will demonstrate the ingenuity of this year's students who have completed the well respected Polly Course.

### **The SMEE Road and Field Steam Stand and Engineers Tea Bar**

The stand will be to the left of the main entrance foyer where an immaculate full size Stanley steam car will be displayed at the foot of the stand. The stand will display a variety of different models to illustrate a wide range of approaches to road and field steam modelling, from the unique one-off model based on original research, design and construction to the fully machined bolt together kits. Some of the smaller engines will be displayed inside running on air, whilst some of the larger models will be in steam providing outside working demonstrations.

Visitors will also have a chance to wet their whistle and relax in the tea bar area where traditional engineer's food will also be available.