

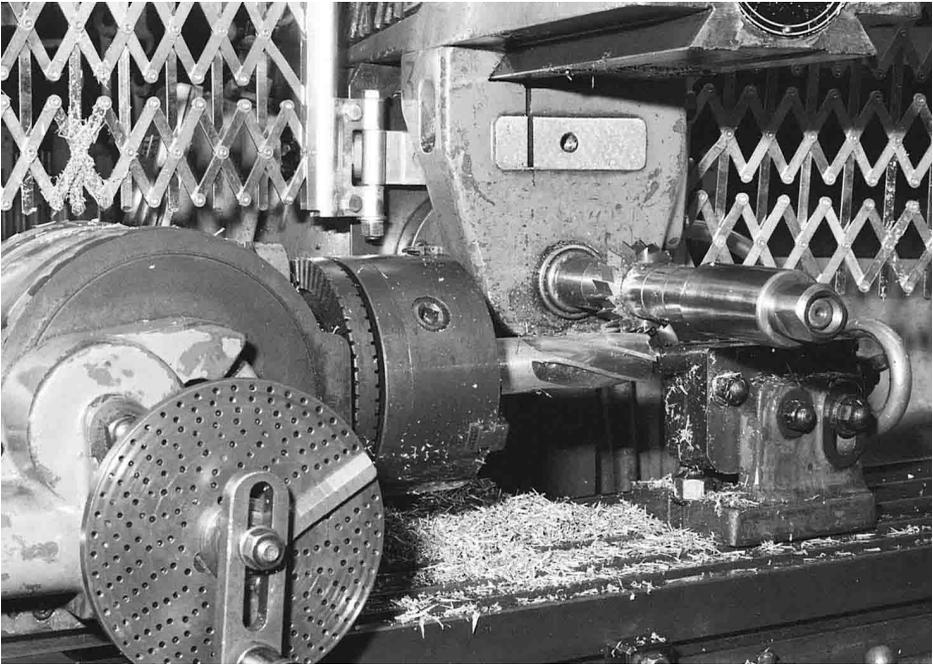
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# The News Sheet

*This Month...*

Midlands Model Engineering Exhibition (page 5)  
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## **From the Chair**

As I write this report just before I do my track steward duties on the last running Sunday of the 2007 season, it is an opportunity to look back and reflect on the achievements of the Society, and particularly the support we give to charitable events.

For me, the highlights for the Society, and in particular the locomotive drivers (including me) have been the pleasure given to so many young people of Childs Hill School, Colney Heath School, St Luke's School, and Mencap. I marvel at the patience of the carers and teachers, but I note the happiness on the faces of the children who have just experienced a ride behind one of our locomotives. Sometimes these events have this summer been blessed with sunshine and how pretty the Colney Heath site becomes under those conditions. We must not forget too those who have provided rides for the various charity fetes in our area. Jim MacDonald and his supporters need to have our praise for this contribution, particularly in the very damp conditions seen this year.

We have also shared our facilities with others throughout the year. Mike Chrisp and I looked after one club day, whilst Brian Apthorpe and his wife looked after another. Toy boat regattas took up two Sunday afternoons, whilst the Gauge One 60<sup>th</sup> Anniversary party run by Malcolm Read was another stupendous event we will not forget in a hurry.

Yes, we all make use of the Colney Heath site in many ways, but it is good that we share our friendship and hospitality with so many others. Come and join us and have another good busy season next year.

Finally, one of our younger members, Robbie Brimson, has completed his course at Loughborough University, gaining a 2.2 degree in Economics. We offer him our congratulations; now it's down to a job seeking role.

*David Harris*

## **Site Manager's Report By David Harris**

As it is still the running season, (at least for another week), not many of the jobs listed in the September News Sheet have been started yet. However, I will give an update in the December issue as the winter working parties will then be in full swing.

If you are a handy chap (or chappess), we would be pleased to see you on Sunday mornings 9 am to 12 noon, with coffee break at 11 am. We can promise you cold

weather, muddy conditions, but 'right good' companionship. Come and join us - I can find you a job to do!

There is one area about which I really do need advice. Whilst it is not my intention to create a 'park', the wild undergrowth needs some taming, particularly the self-set saplings and overgrown trees. Some thinning out must be done as there is much crowding of young trees, few bushes, and too much growth high up. If anyone knows how to look after trees/bushes etc., I would be most pleased to talk with them and formulate a plan of action to improve the far areas of Colney Heath Site and new land.

## Treasurer's Report

At the last Council Meeting we were pleased to elect one new member to our midst. Welcome to John E Bainbridge, 33 The Grove, Silsoe, Bedfordshire, MK45 4EY, who is interested in Locos.

No sooner had I produced the new Name & Address list than the corrections started coming in, so would members please annotate their lists with the following corrections:-

- Colin Bainbridge,
- Brian Luxford,
- My apologies to new members, Robert and Alexander Johns, who somehow became listed as Jones.
- Keith Ashman,

Any other corrections will be published as and when notified...

Finally, I shall be unavailable for most of November, missing the Council and Tyttenhanger site meetings. Any queries during this period will be dealt with after the 28<sup>th</sup>.

*Mike Foreman*

### Cover picture:

Rounding off his presentation on milling at the October General Meeting with descriptions of some interesting operations possible using milling techniques, Mike Chrisp explained how a horizontal milling machine and dividing head geared to the table leadscrew are used to generate helical forms using a form relieved cutter, as shown here.

## Committee Meeting News

### Council meeting, 17 September 2007

The Chairman was pleased to announce that Andrew Smith (MD of the Water Co.) had accepted the invitation to become our President in succession to Peter Darby who had moved on. He had been invited to attend (informally) a Sunday afternoon public running on a mutually acceptable date. He would also be invited to open the proposed Gala Weekend next year (28<sup>th</sup>/29<sup>th</sup> June, 2008).

A letter of thanks had been sent to the Rather Nice Company for their contribution in distributing the printed copies of the News Sheet to members. The pond gate lock had been installed and commissioned.

The Treasurer distributed his balance sheet for the preceding month which included a budget estimate for the rest of the year. This indicated that, subject to the usual caveat, i.e. increasing costs, we remained on target to be able to maintain our current subscription rates for a further year. In October 2006 membership stood at 216 and during the year there had been 3 deaths and 17 resignations (for various reasons). We had elected 25 new members. Current membership stood at 222 (131 Full, 53 OAPs – of whom only 36 pay the lower subscription – 8 Honorary, 1 Special, 19 Country, 7 Juniors, 2 Students and 1 Secretary.

Regarding the Ground Level Railway, and following the discussion at the last meeting, the Chairman confirmed that it was in the interest of all members that the loop round the mound be completed as soon as possible. Peter Funk had prepared an outline budget for the work amounting to approx. £3,000. The Council agreed to make a grant to the GL Section of £1,000 toward the costs.

Comment was made regarding the improvement in visibility of signal 7 when using LEDs to replace the bulbs. It was agreed that John Riches should be authorised to change all the signals as soon as possible.

Possible problems with the age of the signal wiring had been identified and some replacement may be necessary. As a 'safety item', costs would be found from central funds.

Malcolm Reid would be invited to investigate a filter system for the pond.

## **Tyttenhanger Site Committee Meeting, 24 September 2007**

Brian Baker asked if the Track Running book should be signed by members using machinery (e.g. grass cutting) on site in order to activate the insurance. Mike Chrisp noted that such members would be wise to sign the book.

Ground Level Railway: Peter Funk has made and provided a 7/4in. gauge ballast truck for use by the Society. He advised that the ground level railway will be running between Henley Halt and the new land during the Halloween event. An outside light will be fitted to illuminate the pathway to the toilet block by the level crossing.

A pump suitable to circulate the water in the boating lake has been offered. It is proposed to drain and refill the boating lake.

Clarification was sought regarding the matter recently raised by Derek Perham relating to non-members driving for the public on recent Sunday afternoons. The topic had been brought to Council's attention. It was noted that by signing the running book those concerned were covered by the Society's insurance.

## **MIDLANDS MODEL ENGINEERING EXHIBITION 2007**

Visits to model engineering exhibitions are enjoyable for several reasons including the opportunity to meet and chat with friends, both established and new. The opportunity to enjoy the items on display rates high, as does the chance to see what's new in the model engineering marketplace and, of course, to purchase those essential items needed to complete a current workshop project. My recent visit to Chris Deith's Warwickshire Exhibition Centre scored on all counts and I'm sure that others who visited this year's event were also glad they made the journey. Advantages of this venue include convenient car parking arrangements and reasonably priced food likely to suit most model engineers' appetites and pockets.

Monday, the day of my visit was busy. I learned that plenty of visitors had attended during the previous days augmented by a good number of North London members. I also gather that the Fosse Way Steamers were very much in evidence during the weekend, and involved our own Brian Baker with a supporting cast of several. Interestingly too, our Malcolm Read is featured in the middle of the front cover of this year's Show Guide - fame at last, Malcolm! This exhibition is presented in two halls, Hall One being a pleasantly light and airy temporary addition to the permanent building that is Hall Two. I understand that planning application for an extension has met with some success so we may find the venue somewhat different for future exhibitions.

Accompanying these notes are photographs of a few of the items that caught my eye. A fine display by the Midlands Meccano Guild greeted visitors on entry to Hall One and I was much



impressed by John Molden's Eurostar Big Wheel (photo 1) built up on three trailers. Much of interest was to be found in this hall and I

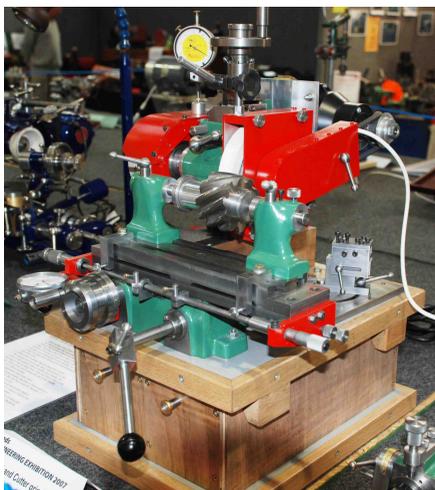


spent some time examining Ian Hughes' Aveling DX6 Diesel Roller in 3in. scale (photo 2) under construction on the South Cheshire MES stand. Lovely workmanship!

It was a real pleasure to find a group of work by some young engineers on display in Hall Two. Among the very well made and finished items were three trophies featuring cubes within cubes. Young Daniel Sawyer's (at right) accompanied his tool-maker's vice, scribing block and three other excellent items.



Other items that caught my eye



A particularly fine Stent tool and cutter grinder (left) was exhibited by C. A. Woodward. It featured several variations on the original design, and the judges must have liked it too for it was awarded a first in its class. Tucked in the corner of Hall Two was the workshop area, manned on the day of my visit by our own Derek Brown who was demonstrating the manufacture of injectors.

Nearby Alec Price was on hand to explain the intricacies of his version (at right) of the clock built in 1570 and to be seen in Breamore House Countryside Museum. Alec's splendid clock features some variations from the original and is smaller.

included a lovely model of the Cutty Sark (below) by T. Orton and two LNER locomotives by J. Sarney and A. Gildersleve (bottom) in the 7<sup>1</sup>/<sub>4</sub>in. Gauge Society display. R. Jones is building a Guinness narrow gauge locomotive in 7<sup>1</sup>/<sub>4</sub> in. gauge too – now there's an unusual and idiosyncratic engine!

This note is necessarily very brief, but I hope it has given a glimpse at another enjoyable exhibition at The Fosse. While adding to my collection of photographs, I must also admit to spending most of my time at the show talking, and enjoyed every minute of it! For those who require more information, I'm sure John Arrowsmith's forthcoming reports in *Engineering in Miniature* will describe the event in detail.



**Text and photographs**

**by Mike Chrisp**

## The October Loco Section Meeting

### by Roger Bell

Jim Macdonald stepped into the chair at the last minute due to Adrian's absence. Jim had given a presentation a while ago which at that time he was unable to finish. It was from a canal holiday, which as he explained involves cruising from 'A' to 'B' and then on to 'C'. A, B & C are in fact all pubs, which he alleged led to a new form of visual disillusionment; we saw some of our members' faces distorted by some trick photographic method which was not elaborated upon.

His photos including those of the Canal Festival at Rickmansworth were brilliant. Moving on to Glasgow, 'Waverly' the preserved paddle steamer was at anchor and under the protection of its watchman; there used to be forty of them plying the Clyde. Another Millennium Bridge was captured; this one pivoted through ninety degrees on a centre support to allow shipping to pass. A photograph from the past depicted the *Empress of Britain* being built in the shipyard; the bow projected out across the road to within about four feet of a house bedroom window.

Back at the BBC but still in Glasgow some satellite dishes were being erected to relay broadcasts from Mexico; each weighed one ton and was securely fitted to the roof as the wind speed is always at least 35mph - they had to withstand 110mph.

Jim's work for the BBC had taken him to Lisbon where he rode on some old trams. Whilst they had modern running equipment they also had all the old fittings, like the bell and interior lamps, and the tram company was more like a working museum. They were well suited to operate in the very narrow streets. It had in fact rained that day, very unusual for Portugal, which had caused many road accidents. There was one just in front of the tram; the completely irate driver having lost control of the car and himself, just ran off. The tram's path was blocked and all the breakdown trucks were busy with all of the other accidents, so they had to get a motor bus. Having time to admire the tram, the driver invited Jim to have his photo taken in the driver's seat, and then to drive it the short distance up to the tram in front.

He then went to see a new Canadian stage orchestra lift, with a ten-ton capability and a sixty feet lift. Photographs of it failed to explain how it worked; the six supporting columns had a spring around them that looked as though it supported it.

On a walk around he discovered an old police box being used as a café serving snacks {Eat your heart out, Tardis – Ed.}. A truck drove up, two men folded down the sides and within an hour a complete full size dodgem track was assembled. We thanked Jim for his presentation.

Chris Vousden then spoke of the topic for the evening, being a look back over the year and a look forward. Chris chose to dismiss the look back as we all know what has happened and to get on with the plans for the future. He has prepared a scheme of a new combined ground level and raised tracks steaming bay, which results from visiting many other clubs in search of good ideas. It would also provide one common gathering area for members to socialise. A new shed (or two containers, clad for appearance) would be erected on the site of the old roller shed for the storage of passenger cars. The steaming bays would be dedicated for 3½", 5" & 7¼" so there would be no problem dropping the grate from a surplus rail underneath it. The bays would accommodate four car parking spaces for unloading; one's loco would then go on a 'Travalator' a new invention that will rotate a loco as well as move it. A complete train can be built up in the long siding which joins the raised track at a moving set of points. Or in the case of 5" the train could go the other way down an incline and onto the ground level by way of the turntable. The existing pit on the ground level will remain in place. The new work would take the largest loco the GLR is designed to take which is a 7¼" Black Five. A complete train could also leave the track by way of the siding into the steaming bays in one go thus reducing the time it takes at the moment. The carriage shed at the raised track station would be kept in place for adding carriages as required. Chris's next objective is to do a survey.

Mike Foreman has been working on the 'Deviation Project' for a few years now and right from the start has sought opinions from all as to its route which will realign the track to give more clearance around a tree. During November Graham Garner will be in charge and Mike requested that he is reported to during Mike's absence. The concreting, piers and in fact the whole structure will be built inside the track first, and the breaking into and joining up with the raised track will be done in a six week period before the running season. Mike's previous experience on the Cuckoo Line project holds him in good stead. A discussion of the intricacies and alternatives of track building techniques followed.

Les Brimson then spoke of the GLR extension and emphasised that any new work is always done after much discussion where everyone has an opportunity to express opinions first. Les drew on the board the existing raised track, the GLR and the proposed extension (years hence) of the raised track, with the stages taken to get there. The GLR would be in a cutting to give headroom for the raised level to pass over it. The maximum gradient on the GLR will be 1 in 70. At another meeting Les will present exactly what all this means in heights.

We thanked all our speakers for providing informative and very worthwhile presentations.

## Loco Section & Tyttenhanger Committee News

### Request

**Bring out your old mugs.** The Coach is starting to run low of mugs. Big mugs with **no chips** please. I have had a number of requests from tea stewards that the kitchen has been left in an unclean state. Those of you who use the facility during the week are asked to leave it in a tidy state. The tea stewards will appreciate it.

### Events

At the **November Loco section** meeting we will be remembering **our good friend Frank Dell** whom we sadly lost recently. Over the years he contributed so much to our society and became a good friend to quite a few of us. He will be sorely missed. John West has some videos to show that nobody has seen yet. But **this event is open to anyone who would like to share their moments.** Please let me know what you can add to this evening. Mike Chrisp has kindly agreed to front the evening but **we do need your input**, thanks.

The **December Loco Section meeting** will be a **Christmas get together and chat.** If anyone has anything to share with members please bring it on. Self entertainment is the order of the evening.

**Winter working parties** are here. **Dig out your boots and winter wear** ready to start on Sunday morning **at 9am start.** Also, **every Saturday all day the Ground level team** will be working hard. Come and join us. The **earlier** you start the **more** we will achieve. It will be great to see as many of you as possible so we can achieve much this winter.

**Comradery** is the feeling when others around you are set to the same goal as you are. This does not need to be a group of friends, but often is a stepping-stone to a great friendship. It is truly great and those who come **enjoy themselves.** Please remember to park your car outside in the lane. **See you there.**

Fri 16 Nov	<b>A Celebration to Frank Dell.</b> - Loco Meeting HQ 8pm. Input required.
Fri 21 Dec	<b>A Christmas get together and Chat</b> - Loco Meeting HQ 8pm
Saturday's (all day)	<b>Ground Level team</b> extending into the new land.
Sunday Morning's	9.00am start <b>Winter Working parties.</b>

### Announcement

**I have decided to step down as Loco Section Leader** (not too many hoorays!!). This will be my last **Loco Section & Tyttenhanger Committee News.** The November Loco section meeting will be my last and I will not be doing next year's steward rota or Loco Meetings. **The position is now open to someone new.**

**If you would like to take on this position please make yourself known to me.** If

there is more than one contender we can have a vote at the next Loco Section Meeting.

I have been your Loco Section Leader for nearly three years and hope I have made a worthwhile contribution to our wonderful society. The position has greatly changed with the emergence of the ground level section, events organisers, project leadership of the raised track and the site. I would like to thank all those members who have helped and supported me over my tenure.

There have been some ups and downs but on the whole I have enjoyed the challenge. It has probably been noticed that my primary interest is in the Ground Level and the New Land Project and for this reason I believe that someone else can take on the Loco Section Leader position. I will continue to take an active role in the Ground level and New Land project and to that end would wish to remain part of the Railway Development Group and the Tyttenhanger committee. I would also be willing to run for council at the AGM.

Remember **Sunday morning winter working parties** see you there and let us all get there early.

*Adrian*

## **GLR Update**

Just a few words to say we have started track bed works on the new land and any help would be much appreciated on Saturdays and Sunday mornings.

Les, Adrian and myself nailed up the height boards for the new track bed construction late on Sunday on the last day of running and what a glorious end to the season weather-wise it was. Hopefully a great start to the winter working parties. If we go back to last year the ground level crew were basking in the winter sunshine and were rained off on only one occasion throughout the season – let's hope for some dejas vue in this season to come.

I briefly mentioned in last month's newsletter about the video library that has been set up. This came about as I understand it through the unselfish realization of a few members mainly Mr Peter Davies and Mr Tony Dunbar (a match made in heaven ) that a glut of videos which instead of being raffled at meetings could be put to better use as a library for all. The videos have now been catalogued and housed in a shelving unit at the clubhouse for all to borrow and indulge in a bit of therapy when the need arises. Well done, lads; a great act for the club.

Halloween is the next event to look forward to and hopefully the Ground Level will be running a special train to complement the evening's activities. See you there

*Peter Funk* G.L.R. section leader

# The October General Meeting by OMAH

(all photos by Mike Chrisp)

Chairman Dave had a few comments. Firstly, we have a new President, Andrew Smith; Peter Darby has moved to a new area of the Water Company. We are hoping to have a visit from Mr Smith in the not too distant future. Mike Chrisp and Co were thanked for their efforts at the recent St Albans Society exhibition.

A new seat has arrived at the track to commemorate the late Tom Luxford. Some discussion will be necessary to decide the wording on the plaque; it is felt that it should be something 'Tommish' rather than 'In memoriam'.

Dave had recently visited Model Engineering Supplies at Romford and had been impressed by their stock and particularly their prices; he had purchased a 2x2-ft sheet of brass for £23. (I can't recall the gauge but the price was in the order of half that at another supplier that had recently moved away from this area.) Strongly recommended, well worth a visit. Name and address to go in the newsheet. {See end of this article – Ed.}. Dave has also provided a bookcase to accommodate the Society's growing video collection. (Peter Davies had brought a few more VHS tapes to add and mentioned that we had started to acquire DVD's also. Thankyou Peter.)

Tony Dunbar reminded us that the North American group will be holding its usual Xmas bash on December 12<sup>th</sup>, all welcome.

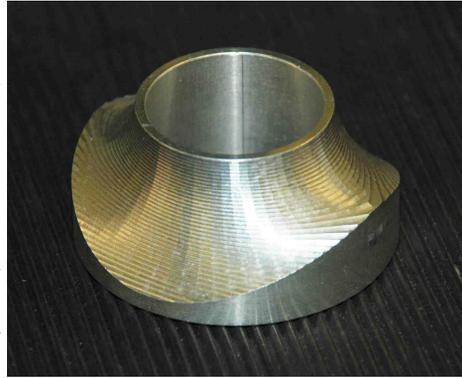
Mike Chrisp said how pleased he had been with the MEX at Ascot and that he was very proud to have been a part of it.

Mike's original intent was to have a forum on milling with comments from the floor on problems, how they were solved, 'ints and tipses', etc. However, since the floor was unusually quiet, he went to Plan B which was a chat on milling intended for a forthcoming SMEE meeting. This was on the almost mandatory Microsoft 'PowerPoint' and Mike skimmed through it, using the highlights to illustrate a brief history of Milling Machines and milling. The lathe was widely used for both metal and wood, and its origin goes back to 1300BC. Whereas the lathe is intended to rotate a workpiece against a fixed cutter for cylindrical turning, a means of shaping flat surfaces was needed. Apart from the early method of a hammer, chisel and file, something faster and more accurate was required. Initially the lathe was used with the workpiece fixed to the crossslide and the cutter rotated in a chuck or a custom built tool holder held through the mandrel. This method was satisfactory for small items but lacked the length of table travel and rigidity for longer cuts.

The early mills were developed from the lathe and had larger tables and more robust headstocks; the headstocks were developed so that they could be moved toward the table sliding either on a mitred fitting or a cylindrical column. They could either be vertical or horizontal working; the vertical, if you stretch the imagination, being like

the lathe standing on end, the horizontal having its drive at right angles to the table. Both types were used for different work requirements; the horizontal was usually the more robust and had the ability to take wide cuts. A selection of cutters can be slid on the horizontal shaft (arbor) with spacers to suit, and the cutters are available in a range of shapes and sizes. Vertical mills use cutters that resemble twist drills mounted in a chuck with its axis vertical. These cutters are also available in a wide range of shapes and sizes. Some milling machines are available that can be configured to operate in either vertical or horizontal mode but most model engineers tend to favour vertical mills or mill/drills. (Mike also mentioned that one of the early deviations in their development was the 'Universal'

mill which had the ability to tilt the head and the table thus enabling spiral cuts to be generated. I must confess that initially I thought that the term referred to a mill that could work in either vertical or horizontal mode. We live and learn!). Also in the early days shapers and planers were developed; the shaper uses single point tooling to traverse a workpiece mounted on the worktable. The cutter is similar to a lathe tool and the work is moved incrementally across the tool path between strokes. Planing machines also use single point tooling and the work is mounted on the machine table. However, during planing it is the workpiece that traverses beneath the tool while the tool moves incrementally between strokes. The planer has the advantage that the size of the table can be very large thus enabling large workpieces to be machined.



*While discussing various types of milling machines, Mike referred to Computer Numerical Control an included this example of 2 1/2 axis CNC milling of a 5in. gauge Rail Motor chimney base produced on the Bridgeport R2E3 to which he had access at St. Albans College.*



*Any general consideration of the varieties of milling machines had to include reference to the Bridgeport Series 1 milling machine. Mike included this picture of one such machine once housed in the main workshop at St. Albans College and seen here being used by Ray Baskerville.*

Vertical mills involve a base, column and head. Sturdy construction and accurate alignments are important if accurate work with a good finish is to be produced.

Starting at the top, the head houses the spindle driven at a chosen speed by an electric motor. The speed can be selected by means of belts, gears or electronic control.



*Discussing the alignment of the vertical spindle of a milling machine, Mike showed how a plunger type dial gauge and L-formed bar is used to sweep from one side of the table to the other. Careful adjustment of the head brings the dial gauge readings the same each side and sets its axis vertical.*

The spindle runs in sturdy bearings mounted in a quill that can be fed along its axis by means of a capstan or handwheel and sometimes under power. This feature provides a reason for the description 'mill/drill' since by fitting a drill chuck into the spindle nose, the vertical milling machine doubles as a useful drilling machine. An adjustable depth stop is often fitted to limit the extent of vertical spindle movement. The spindle is usually hollow with a tapered bore at its lower end (nose) into which cutters and cutter holding devices can be mounted and secured using a drawbar. Collets and chucks specifically designed for holding cutters true and secure are available. The workpiece is mounted on a co-ordinate table at the base of the machine. The table is provided with T-slots so that the workpiece can be secured by mean of clamps, machine vice or other workholding device. The table can be moved to left or right (X-axis) and back and forth (Y-axis) by means of feedscrews fitted with handwheels and index dials. Power feed for the (X-axis) is sometimes provided. Movement of the workpiece against the rotating cutter produces the required surface geometry and finish. The index dials give a excellent degree of accuracy with practice and allowance for backlash. Digital Readouts (DROs) are available and can be fitted to most machines if increased accuracy is required.

Choice. The size of the machine is obviously dictated by the size of the workshop and the depth of the pocket. In a perfect world, the Bridgeport Series One is arguably the ideal vertical milling machine; however bearing in mind the cost, size and weight (c 1.5tons), circumstances have to be considered. (One has to bear in mind that the space required is a triangle, and a bit of pre-purchase work with some squared drawing paper may be necessary.) There is a considerable amount of choice in the lower cost range; you only have to visit one of the larger model engineering exhibitions to be overwhelmed. There are quite a lot of second-hand machines available and provided that you have some idea of the quality of the supplier this can save a lot of money. However, buying new gives (or should give) the security of knowing that the equipment is in good order. Be warned that apparently identical machines can vary in detail and quality of manufacture.

Safety. Belt driven spindles can be hazardous since the associated cone pulleys are at head (and hair) level. The belts are enclosed within a sturdy housing which should

always be replaced after a change of speed adjustment; some guards are fitted with a microswitch cut-out. The cutting zone can be guarded by a hinged enclosure which has the advantage of stopping swarf and cutting fluid being flung far and wide. Avoid loose clothing which not only might catch up in some moving part but might also prevent you reaching the STOP button. (It is possible to buy a foot switch, which could save a lot of grief in an emergency.)

Accessories. Milling machines are typically delivered with few accessories. The budget for the new machine should include almost as much for extras as the machine itself. Occasionally the vendor throws in some accessories if they are having a special offer, and they usually include a drill chuck. Basic work and tool holding devices will be required from the start. Many model engineers prefer to use a machine vice to hold the workpiece and a collet chuck to hold the cutter. It is possible to hold a cutter in the drill chuck but, due to the fact that the tooth geometry of spindle mounted cutters tends to cause them to be drawn out of their mounting during use, this could be an unwise practice. A selection of slot drills and end mills will be required and may be augmented by flycutters, a boring head and face mill. A dial gauge, with means to mount it, to check machine and workpiece alignments. A centre and/or edge finder will become an indispensable accessory. There are many other useful bits such as a rotary table and arbor for holding a 3-jaw chuck, a suitable arbor for slitting saws, etc, etc. It may be as well to delay the purchase of a particular accessory until it is needed for a specific operation. Club auctions and rummage sales can be a useful source of second hand equipment.

Using a milling machine. Chuck mounted cutters include face mills, flycutters, shell mills, end mills, slot drills, T\_slot, Woodruff key-seat and dovetail cutters. Model engineers carry out most of their milling using end mills and slot drills. The end cutting teeth of a slot drill extend to the axis of the cutter, whilst those on an end mill do not. As a result, a slot drill can be used to drill into the workpiece, an end mill cannot.

Speeds. Selecting the correct cutter speed may challenge the novice. Fortunately for us it is not critical in the home workshop and becomes less of a problem as experience develops. It should be noted however that a cutter running at a speed noticeably greater than that recommended may be rapidly blunted while speed noticeably lower than recommended may increase the force on the cutting edges and lead to damage or breakage. Since milling cutters are less easy to sharpen than lathe tools it is as well to follow manufacturer's guidelines.

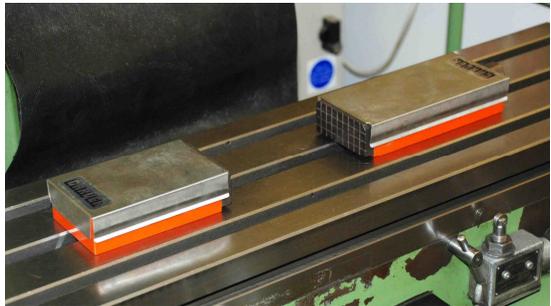
Feeds. It may be best for the novice machinist to avoid the use of power feed, if available, until accustomed to the feel and sound of milling operations during manual operation. Feed rates are generally given in terms of a recommended speed per tooth. A typical feed rate per tooth of 0.004in (0.2mm) for a two flute slot drill running at 800rpm will lead us to a feed rate of about 6in/min (150mm/min). Remember this only gives us a starting point. When working with a robust cutter and machine and in

a free cutting material it may be appropriate to increase the feed rate. A delicate cutter working in a tough material may require a lower feed rate. Excessively rapid feed rates may cause the machine to stall, dislodge the workpiece and damage the cutter. Lesser machines are likely to make nasty noises when stressed! For reasons of safety the work should always be fed into the cutter so that the cutting action is pushing against the feed direction. This technique is known as upcut or conventional milling. It can be dangerous to allow the cutting action to pull the work into the cutter, a technique known as climb or downcut milling. While there are several good reasons for using climb milling, its use is not recommended to the novice.

Depth of cut. The depth of cut is chosen according to the nature of the work, the material being used and the cutter in use. Excessively deep cuts may cause the machine to stall, dislodge the workpiece and damage the cutter. Excessively shallow cuts may cause workhardening with consequent dulling of the cutting edges and poor accuracy and finish on the workpiece.

Cutting fluids. Machining conditions can be improved by the use of cutting fluids since much of the heat generated by the cutting action is flushed away by the water content of the fluid and the cutting action is lubricated by its oil content. The use of cutting fluids can also increase material removal rates by permitting greater speeds and feeds to be used. Notwithstanding the above, most model engineers prefer to work without cutting fluids thereby avoiding the inevitable and unwelcome resultant spray and fume in the domestic environment.

Work holding. Many model engineers prefer to use a machine vice to locate and hold the component being machined. Versatile and useful, vices are available in various forms including plain, swivel, universal and special types. It is important that no swarf or other debris is trapped between the base of the vice and the table to interfere with the resultant accuracy and that the vice is properly aligned to the appropriate machine axis. A dial gauge is invaluable to correct alignment. It is also important that



*During a discussion of workholding, Mike referred to these Carver table clamps. They consist of separate fixed and moving jaws which bolt onto the milling machine table. The result is a very low profile and versatile workholding system.*

the work is firmly clamped in the vice with the datum surface against the fixed jaw. For preference the cutting action should force the work against the fixed jaw. Much can be accomplished on a milling machine without the use of a vice. Clamps can be used to hold the workpiece onto the table. Clamp sets are available with T-nuts, studs, heel blocks, clamps and nuts to suit many configurations. A fence can be clamped to



*Mike confessed that he would be lost without his table fences. One of a pair is seen here in a table T-slot in use to locate a workpiece for milling. The workpiece registers against the fence and locates against a partly hidden cylindrical stop. A plate clamp and heel block provide the clamping force.*

the table to locate the workpiece and a stop used to constrain the last of the so-called six degrees of freedom. The table T-slots can also be used to locate the workpiece. Other workholding devices including vices, vee blocks, angle plates, rotary tables, dividing head and tailstock can be fitted with tenons that fit snugly into the T-slots to facilitate accurate location and relocation following removal.

(I thought that the last section, which included some of Mike's tips, was the icing on the cake. Mike does not favour vices but prefers to clamp the work down and gave several good reasons for doing so).

A splendid evening which was received with vociferous applause.

{The metal supplier that David Harris visited is:- Model Engineering Supplies, 188 Crow Lane, Romford, Essex, RM7 0ES; ☎ 01708 722346 or 341216. Ed.}

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## Ken West's RAF Memoirs - Part II

A few days later I was posted to Leeming, the HQ of the Canadian Bomber 6 Group, a peace-time drome.

As soon as I arrived I was picked to be the F.E. for a newly-converted crew from Wellingtons - F. Officer Hughes was the Skipper and a few days later took a few ground crew on a 'Cook's Tour' along the French coastline.

On June 5<sup>th</sup>, we spent an afternoon picking up bombs and dumping them in the North Sea and went to another Canadian drome and picked up 14 containers of incendiaries and dropped them in the Irish Sea.

A few days later my Skipper returned to Canada and, on June 26<sup>th</sup>, another F. Engineer-less crew, F.O. Marshall as Skipper, grabbed me. We spent the next week picking up and dumping bombs in the North Sea and even went back to my old drome - Tholthorpe - and managed to pick up and drop another thirty-six containers of incendiaries in the Irish Sea.

As the Canadians were waiting to go home and be de-mobbed our ground crew became a bit slack in maintenance and we had several things found where they shouldn't have been on various other planes. We solved this by picking a ground crew every time we went on another trip - careful maintenance improved quickly.

Peacetime was very different from war time at a permanent drome. I shared a room in married quarters with another English F.E. and, in theory, we only worked a five day week. At the weekend you could get a leave pass from your Section Leader - or your Skipper providing he was a Flying Officer in rank - and you could go home after we finished on Friday afternoon. I knew the times of all the trains to London and spent my weekends with Barbara - the young lady I later married. She saw me off to York from Kings Cross at 11pm on a Sunday and I slept in our local train on the bay platform which later delivered us at the station near Leeming, and an RAF coach took us back to Leeming ready to start work again.

On one trip (across country) over France we took our Chief Technical Officer with us as a passenger. We were all set to cross the Channel when the starboard outer engine ran away - the propeller went faster and faster and I was unable - in theory - to feather it (turn the propeller blades sideways on so they just stopped). The Chief Technical Officer tried, we gave up and I helped my Skipper to try and keep the plane flying straight but to no avail as we were going round in ever smaller circles. We spotted an aerodrome - Stubby - and attempted to land on the runway - no second go would be possible. I went through the process for a landing. Suddenly they fired a red flare at us and I suddenly remembered I had not lowered the undercarriage, being so busy helping the Skipper keep the Lancaster on a straight and level flight. The undercarriage was hydraulically operated - it went down and locked just as we touched down and the wheels hit the runway. It was a close thing. Having the Chief Technical Officer as a passenger I didn't have to make a report and walked to the Sergeant's Mess and had my first half a pint of beer!

Each morning, we reported to our Section and our Skipper told us if we were flying that day. If we were, the whole crew went out to Dispersal to do their check ready for our flying. When we had no flying to do, we played Pontoon for threepenny bits - if you lost it amounted to a lot of money by the end of the week. I came home one weekend and was glancing through the local paper and saw a Meccano set for sale. Dressed in 'civvies' I went to see the gentleman selling the set and bought it. I asked him why he was selling it and he replied that he had been called-up for National Service. I failed to tell him that I was in the RAF and was taking the Meccano set back with me! I used it until my flying finished at the end of 1945 and it then kept me occupied until I was sent to Whitton, near Blackpool, at the end of February 1946.

At the beginning of September we did a pre-Italy cross-country flight across France which took over five and a half hours to get ready to fly 'Dodge', a trip to Pomigliana - to bring home 24 'Desert Rats' (sitting during the flight on the top of the bomb bay) for early de-mob in October.

On October 6<sup>th</sup>, we flew in a 'gaggle' formation over York and Leeds to open their 'Thanksgiving Week'.

After several more French cross country runs, we finally made our 'Dodge' trip - 6h 40m - via the Alps on October 20<sup>th</sup>. In theory, we flew out to Pomigliana one day, had a day's rest and, in theory, flew home the next day. In practice, as the year was getting late we either had bad weather over the Alps or over England and stayed in Italy until November 3<sup>rd</sup>. We lived off the plentiful supply of cigarettes provided by the Canadian Red Cross - I think each Canadian got a 200 pack every week. As you may or may not know, cigarettes were the currency after the war in the countries we took over after the Germans surrendered.

The Italians paid you 1200 lira for a packet of 20 and, when you made the transaction, you passed over the cigarettes into their hand at the same time as you grabbed the 1200 lira. The Italians were very good at palming the 1000 lira note and running away. Once the trick back-

fired on them - our Skipper had an empty packet but got paid for it.

During our stay we of course lived in the Sergeant's Mess so we lived a tourist's life. One day we went to the Isle of Capri and visited Pompeii and saw the bodies, etc. when the disaster struck - most impressive.

On November 3<sup>rd</sup>, we were told we had to fly home regardless of the weather as the backlog of 'Desert Rats' was piling up. We did a miniature Cook's Tour over Mount Vesuvius and the Isles of Capri and Ispuir, and the Bay of Naples.

As we had 24 troops in our plane, we were unable to fly above 10,000 feet through lack of oxygen. We were also told not to leave our parachutes lying around in case it gave the troops the idea we might bale out and leave them.

As we had to fly over the Alps and 10,000 feet didn't leave us that much room, we had to take the shortest route between Italy and England. Needless to say, we got caught in cum-minis clouds and a lot of air pockets. One of these made the outer wings of the Lancaster go up and down like a large bird - scary. Also, we started having ice form on our wings and we had no de-icer units to remove it. When we finally got near England the weather was so foggy we got diverted to St Mawgan, an emergency landing drome in Cornwall. The flight took us seven and a quarter hours and were we glad when we landed safely!

We inspected the outer wings of our Lancaster and found that several rivets had popped out of the joint where it joined the inner wing. We flew home three days later and the plane was put in the 'US' dispersal never to fly again.

That was the last of my flying as aircrew. I clocked up 235 hours 37 minutes plus 31 hours 54 minutes night flying. It was an interesting part of my life.

At the beginning of March 1946 I was posted to Weston near Blackpool on a DMT (Driver Motor Transport) course. It was only a three-week course - the shortest way to acquire a 'trade' in the RAF. Aircrew were not 'trade' in the post-war RAF. As there were so many aircrew not doing anything 'useful' and we had very low de-mob numbers, it was a quick way to acquire a 'trade'. We were posted overseas to bring back the 'regulars' for de-mob.

We were taught by the BSM - three in a car for half a day, every day for two weeks. The other half of the day was spent learning about maintenance and how brakes and engines worked. We were passed out by BSM and then the Board of Trade Instructors took us out in the three-ton lorries (Dodge, Bedford and Thornycrofts) with crash gear boxes which needed a double de-clutch gear change. The worst part of driving was meeting the Blackpool trams coming the other way when you were trying to overtake the tram in front of you.

We always stopped for our 'elevenes' at a well-known lorry cafe on the outskirts of Blackpool where we had 'toast with marg'. It was something to remember - especially the mugs of tea.

When the Board of Trade examiners passed us out, the final test was to drive a high-level Bedford down a slope into a pond. The water came up through the floorboards to just below the pedals - a bit scary. We were given a green form (a full licence) which we could use when we acquired a car of our own without having to take a civilian driving test. I redeemed mine in 1964 when I got my first car.

I was posted to Yatesbury in Worcestershire where I shared a room with my future Best Man, 'Titch' Gurney - so named because he was shorter than me. He had a wind-up gramophone and several good records that we enjoyed listening to together in the evenings.

We were posted to go to the Far East (Japan) and took the train to Newhaven and then a boat to Dieppe. A train took us across France to Toulon where we boarded a 'Liberty' ship converted to a troop ship. We tried to sleep in the hammocks. Titch and I were in charge of the dish-washing machine while on board. We anchored at Malta on one beautiful summer Medi-

terranean day and then proceeded to Alexandria in Egypt.

We travelled the length of the Suez Canal by train to a transit camp at El' Aiyat. It was a tented camp with brick walls around the outside of the tents to keep out the sand and creepy-crawlies. It was very hot during the day but the nights were quite chilly. While we were there we visited the Dead Sea and 'tried' to swim in it! Outside our camp was a large Bedouin tent where we were allowed to peep in and watch the 'Dance of the Seven Veils'. I was called into the Adjutant's office and asked whether I would like to go back to Naples instead of going to the Far East as my ten day stay on the 'Dodge' trip had already counted as 'overseas' service. He was ex-aircrew and I asked whether Titch Gurney could come with me. He said 'yes' as he had noted that we went around together. We went up the Suez Canal by boat to Alexandria and took a passenger ferry to Naples. The base was a little way out of Naples and had a lovely view over the Bay of Naples. After a couple of days I was asked if I would drive about twelve airmen to the railway station in Naples. I started off driving on the continental (right) side of the road but, when I got to the square in Naples, I got confused and went round the wrong way. You should have heard the blowing of horns from all the little Fiats!

We then went by train to the peace-time Italian aerodrome at Treviso where we were billeted in some fabulous rooms in the Sergeant's mess - marble floors and big windows which overlooked a river. I reported to the DMT Section and Titch and I were given a 15cwt Chevy, a truck for taking Spitfire pilots from the mess to Dispersal. We became great friends with the regular Flight Sergeant of the Motor Transport Section. We maintained our vehicle according to the daily schedule so, if any Officer wanted to get into Treviso, he could be sure of getting there and back safely.

One of my regular runs was to collect a dozen large blocks of ice from the ice factory in Treviso every day. Not knowing any Italian, I went into the town but couldn't find the factory. I asked some locals where it was. I acted 'shivering' and, pointing to the nearby stream, saying 'giachio, giachio' (ice-cream). They laughed and pointed down a small street - and there was the factory! Of course, in those days, fridges weren't around so the ice was broken to keep things cool.

Another of my jobs was to take the Officers' wives into town to shop so we kept our vehicle clean - even the floor. I also had to go to RAF Headquarters at Undine once a fortnight to collect a sack of Lira to pay the wages of the personnel on the drome. The first time the Accounts Officer asked me if I would take a rifle to protect the cash we were carrying. I said that I hadn't handled a rifle for over two years and didn't intend handling one now as I might have killed myself firing it in the small cab of my 15cwt Chevy. So the Officer and I travelled with the sack of lira between us. One night on duty I got a phone call from an Officer in Venice who had got an attack of malaria. He wanted me to pick him up and bring him back to the Sick Bay. I was a Flight Sergeant by then, so I used my rank and drove to Venice and brought him back. The next day the Duty Officer said I should have got authorisation from him first. I replied that I knew how desperate the Officer was for help and had no time to find him in the Officers' Mess.

Each day we started work at 5.30am and finished at 1pm. It was very hot in the summer and, in the afternoons, we paddled a Spitfire drop-feed tank up and down the river.

One evening the Group Captain phoned and asked me to bring his car down to Treviso so that he could drive his wife and friends back to base. The car had a lorry engine under the bonnet and a gear change on the steering column and I'd never driven it before. I started off

in bottom gear and then a violent storm erupted. A flash of lightning blinded me and I drove the car off the side of the road into a ditch. I abandoned the car and went back to the Sergeants' Mess and told my friend the Flight Sergeant in charge of the workshops what had happened. He said not to worry as he would pull the car out of the ditch and leave it outside the Group Captain's home. I then drove down to Treviso in my 15cwt and told the Group Captain what had happened. He was not very pleased as he and his guests had to sit on the bare boards of my Chevy. It all ended happily. His car was standing outside his home when he got back. My Flight Sergeant had turned up trumps!

I drove my lorry to Cortina twice for a long weekend with twelve of the RAF Ski Team. Titch Gurney was the co-driver. The 3 ton Dodge had a long gear lever and, as we were climbing up a very steep zigzag road, the gear lever wobbled into neutral and we started going backwards - a bit scary!

I also had a short spell as driver of the station fire-engine. When I wanted to try out the pumps, the crew and the German POWs said 'no' as it meant unwinding the hose reels then drying them out. I thought 'what a shame!'

During the autumn of 1946, the whole station moved up to Judenburg in the mountains of Austria. The Spitfire Squadron were to be used in the Trieste war (between the Italians and the Yugoslavians). Titch and I were left behind to load up the Group Captain's possessions. We drove them to Kalenfurt and were told to stay with the lorry. We slept in the cab (the first and only time I didn't sleep in a bed). The next morning the Group Captain swept into the Car Park and we were told to follow him. By the time we had reversed out he had vanished up the road. We came to a T junction where there was no signpost. We took the wrong turning and, after an hour, finished up on the side of a narrow mountain road. Realising we'd made a mistake we found a bit of a ledge and started doing three point turns - about thirty in all! It was a near thing as the lorry tailboard hung over the edge several times! When we eventually arrived at the Judenburg drome the Station warrant Officer said he was about to send out a search party and he was very pleased to see us safe and sound.

There was an ex-aircrew Officer in charge of the Section and he said it was time we were promoted in our own 'trade'. He asked us a few easy questions and said we would now get confirmation that we were LACs (Leading Aircraft Men). This meant that we had an unusual title in our pay-books - Flight Sergeant, Flight Engineer, Leading Aircraftman, DMT.

A few days later I was told to report to the Adjutant and was asked if I would like to run the Station's Print Workshop. I said 'Yes!'. Titch and I were also asked if we would like to drive the Allis Chalmer snow plough as we had the LAC rank in the 'trade'. Most of the other drivers were National Service personnel with no 'trade' rank behind them. We checked oil and anti-freeze in the radiator and only ever topped up with almost pure anti-freeze as the winter can be very cold in the middle of the mountains.

I printed local telephone directories for all the RAF Stations in the area. I printed forms and the Cinema posters. The only snag was that the different countries had brought in different cases of type and the type heights weren't the same. To make up some print jobs, I had to put a couple of layers of paper under each line. The printing machine was an automatic Eidelburgh. Where I had worked previously I used a foot pedal cropper but I soon got the hang of this machine and produced some good work.

As we were in the mountains we could see the snowfall line moving down every day until it snowed solidly for a few days. We then had to drive the snowplough up and down the run-

way and the Dispersal to allow our Spitfires to do their missions. The best part of the job was the cup of tea with a dash of rum in it that we were given every time we'd gone up and down the runway. By the time we'd finished the job the lines weren't quite as parallel.

Several times we were called out to go on the road and attach the front of our snowplough to the nearest tree and to use the wire winch to haul lorries back on to the road.

The job of the six-wheel crane driver came up and, with my LAC Trade rank, I applied for it as it was one of my ambitions to drive a crane. I had to go for an interview and they said they would like to accept me but, unfortunately, my rank and pay as a Flight Sergeant prevented me from being given the job! It was a post for an ordinary airman to be promoted to a Corporal. I was disappointed.

I was billeted in a room in a wooden hut with a round iron fire to heat the room. The windows were double windows. When I awoke the first day an ex-Austrian soldier gave me a wake-up call and, when I asked him what he wanted, he said he was the hut's batman and did I want my shoes cleaned! I was astounded and said 'no, thank you'. He then said he would light the stove and bring the coal in every day, clicked his heels together and disappeared.

Christmas 1946 was the first peace-time and coincided with a 4 day Christmas break. There was nothing to do so everyone had a merry drinking time. As I was not a drinking man I retired to my hut and finished collating a Group Telephone Directory. Boxing Day afternoon, I smelt smoke and, turning around, I noticed smoke creeping out from under the door. I dressed, collected all my personal belongings and opened the double windows and dumped my kit and all the Telephone Directories outside on the road and waited for the fire engine to arrive. It arrived fairly soon but the crew were slightly 'happy' and, when they tried to connect the inlet hose to the hydrant, the fittings were not compatible so they just stood there and laughed. We had other spectators with their girlfriends coming out of other huts. All of a sudden, a voice boomed out telling everyone to return to their huts, etc. - a new Regular Group Captain had arrived on Christmas Day and things started to tighten up - parades, salut-ing Officers, etc.

Early in the New Year, the Trieste affair was settled and the Spitfires were sent elsewhere and the drome was given back to the Austrians.

I was asked where I would like to be posted when I returned to England in a few days. I thought, why not return to the York area as I know all the train times? As is normal RAF procedure, I was sent in the opposite direction to Kidbrook in South London.

I didn't do any more driving but was escorting NCOs on a mail service from RAF Headquarters Kingsway to various other mailing sections in the London area. I remember we used to do a regular hourly service to Oxford St. and Victoria.

When we finished at 5pm I would go down the steps of the tram subway and catch the tram to the Angel, Islington and walk down to Northampton Square to meet Barbara, my fiancée. We would then walk to her home and have a super tea with her family. About 10pm, I would walk back to the Angel Tube Station and catch my train to Kidbrook. It was a nice ending to my three and a half years in the RAF. I was de-mobbed in June 1947.

## 📖 Dates for your Diary 📖

- Friday 2 November 8.00pm General Meeting; On the table - work in progress; HQ, Legion Way, North Finchley
- Monday 12 November 8.00pm Council Meeting; HQ, Legion Way, North Finchley
- Friday 16 November 8.00pm Loco Section meeting; A celebration of Frank Dell; HQ, Legion Way, North Finchley
- Friday 23 November 8.00pm Workshop Evening; HQ, Legion Way, North Finchley
- Friday 23 November Deadline for copy to Editor for December News Sheet***
- Monday 26 November 8.00pm Tyttenhanger Site Committee Meeting; the coach at Colney Heath
- Friday 7 December 8.00pm General Meeting; pre-Xmas Social Evening; HQ, Legion Way, North Finchley
- Monday 10 December 8.00pm Council Meeting; HQ, Legion Way, North Finchley
- Wed 12 December 8.00pm North American Section Open House, with refreshments; HQ, Legion Way, North Finchley
- Friday 21 December 8.00pm Loco Section meeting; Xmas get-together & chat; HQ, Legion Way, North Finchley
- Saturday 29 Dec'ber 2.00pm N American section extended running session; HQ, Legion Way, North Finchley; the perfect antidote to Christmas lethargy; Come and play trains on the HO layout. No experience necessary.
- Friday 4 January 2008 8.00pm General Meeting; HQ, Legion Way, North Finchley
- Monday 14 January 8.00pm Council Meeting; HQ, Legion Way, North Finchley
- Friday 18 January 8.00pm Loco Section meeting; programme tba; HQ, Legion Way, North Finchley
- Friday 18 January Deadline for copy to Editor for February News Sheet***
- Fri 18 - Sun 20 Jan London Model Engineering Exhibition, Alexandra Palace**
- Friday 25 January 8.00pm Workshop Evening; HQ, Legion Way, North Finchley
- Monday 28 January 8.00pm Tyttenhanger Site Committee Meeting; the coach at Colney Heath

**NB: There is no issue of the News Sheet for January; the Editor and the regular contributors like to have a Xmas break!**



- Every Wednesday British and American Miniature Railways and Video Group at HQ; Garden Railway Section at Colney Heath
- Every Thursday Slot Cars Section at HQ
- Every Sunday Morning working parties at Colney Heath (start 9.00am).

**NB: Please remember to notify all meetings, events & exhibitions, in advance, to Owen and Rachael Chapman, who act as Keepers of the Society Calendar and Tyttenhanger Site Events Co-ordinators.**