

EXPANSION LINK

BASINGSTOKE and DISTRICT MODEL ENGINEERING SOCIETY



Volume 8 - Issue 2 – June 2014

Editor Austin Lewis

Spring Rally
April 2014



We had a very successful Spring Rally with the sun shining both Saturday and Sunday. There was a steady stream of visitors over the weekend enjoying the many traction engines (30 at one time), the many train and traction engine rides and the Aveling and Porter roller above. The tombola was a success as was the sale of programmes – a first this year. Another first was the appearance of Axminster Tools who very kindly sponsored the production of the programme and flyers which were

distributed around the town during the weeks before the Rally. After accounting for all of the expenses we made a profit of just under £2000 – well done to the Rally Committee of Jon E, Dave M, Colin S, Richard H and yours truly and a second thanks to Dave M for preparing the programme and for providing a very large marquee. There were many other members and wives who helped over the weekend and a very great thank you to them because if it wasn't for the help then we wouldn't have had the success we had,

THANK YOU

As usual, Richard H was out and about with his camera and his pictures and a few of mine follow:



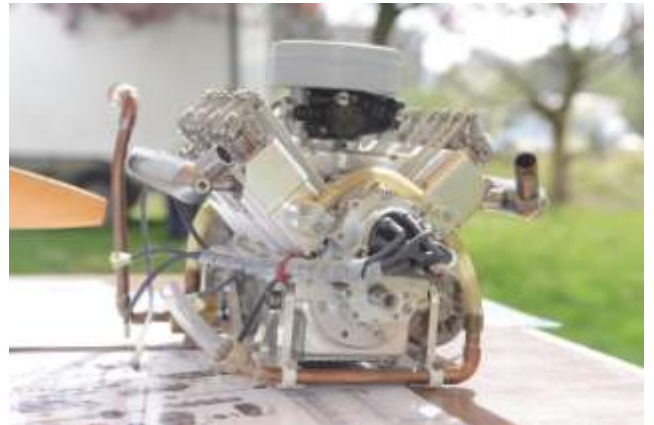




Hot lunch



Basingstoke Boat Club



Vixen V8 water cooled 80cc



The manager and assistant manager from Axminster Tools, Basingstoke









What more could you ask for?

The Model Engineer & Electrician

99 Years Ago

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Model L. & S.W.R. Locomotive.

By S. L. THOMPSTONE.

THE accompanying photographs are taken from a $\frac{1}{4}$ -in. scale model express passenger locomotive of the L. & S.W.R. Co.'s "580" class, which I have recently completed.

The model was commenced in September, 1900, and has occupied most of my spare time since that date. The photograph (Fig. 5) shows what progress had been made on the model after nearly twelve months' time had been worked; Fig. 4 represents the locomotive twelve months later, in 1902; Fig. 6 is a photograph of the boiler, showing the firebox and flue ready for fixing to the outer shell, taken in December, 1902; Fig. 3 shows the model March, 1903; and Figs. 1, 2, 7, 8 and 9, March and April, 1905. Photograph (Fig. 8) shows half the cab plating taken off, and the other view shows the complete model. It will be noticed by the photographs that it is not painted; this it is not intended to do at present, as all the parts are brass and bright steel, and it would be a pity to cover the same with paint.

The side frames of the engine and bogie are $\frac{1}{4}$ -in. brass, and were cut from the sheet; this gauge of brass was used so as to give the screws a good screw hold, as there are only a small number of rivets used in the model, and these come in the boiler. The bogie and main side frames have cast brass brackets and turntable securely screwed thereto. The turntable is so arranged as to give lateral play, and is fitted with small steel springs to bring same back to the proper position after going round curves, etc.

The wheels are of gunmetal. The bogie wheels are 2 $\frac{13}{16}$ ths ins. diameter, with ten spokes, and the drivers 5 $\frac{5}{16}$ ths ins. diameter, with 22 spokes, and are securely driven on to the axles; there are two spiral steel springs to each wheel, adjustable by a washer plate and nuts and lock nuts. The axles are of cast steel, working in gunmetal bearings, the latter being fitted into proper horn blocks.

The cylinders are of gunmetal, and are 27-32nds in. bore by 1 $\frac{1}{2}$ ins. stroke, with two drain cocks to each. The cylinders are bolted to the side frames by four $\frac{1}{4}$ -in. screws each. The pistons are of gunmetal, with lamp-cotton packings; the piston and valve rods are of silver steel, and the slide-bars and connecting-rods are of mild steel; the connecting-rods being fitted with brasses at the big end. The coupling rods are of iron, with circular gunmetal bushes working on to silver-steel crank-pins. The crank-pins have steel collars, with taper pins through same at the ends for keeping the coupling-rods in place. The cross-head and slide bar brackets are gunmetal castings; the crossheads being milled out for slide bars and connecting-rods.

The motion work is the usual type of Stephenson link motion; the links, lifting links, blocks, weigh-bar shaft, lever and reversing lever are all cut from mild steel, and polished. The eccentrics, sheaves, and rods are all gunmetal castings, and finished bright. The sheaves are fitted with lock-nuts and split pins. The reversing lever works in

a gunmetal and steel quadrant in the cab, which is notched out to give a half and three-quarters cut-off to the valves.

The four coupled wheels are braked by means of a hand brake; the blocks are of gunmetal fitted to steel hangers, which hang from studs on the side-frames; these hangers are connected to each other and the brake lever by flat steel rods. The brake handle shaft works through a gunmetal column to the brake lever, and by a turn of the handle all the four wheels are firmly locked. The arrangement of levers, &c., is clearly shown in the photographs.

The sand-boxes are cored-out castings, and are fixed to the inside of the main frames immediately in front of the driving wheels, and the pipes from same are bent to come directly over the rails.

The boiler, as will be seen from the photograph, differs from the usual type of locomotive boiler with regard to having one main flue tube from the

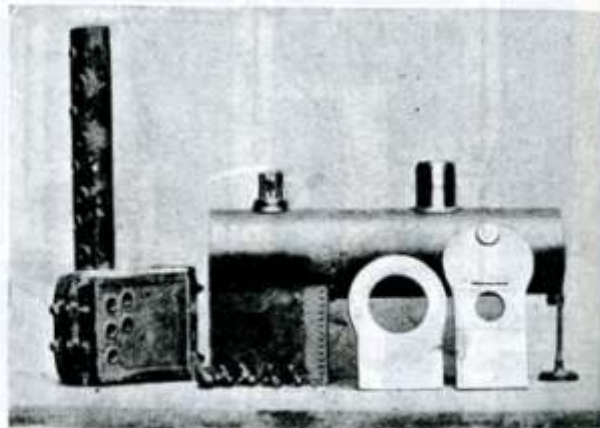


FIG. 6.—BOILER, FIREBOX, AND FLUE.

firebox; this tube is made oval, and crossed zig-zag by eight $\frac{1}{4}$ -in. copper water tubes. This form of flue was chosen from experience I had of one I fitted in a boiler for the model steamer *Iey* (described in THE MODEL ENGINEER, June 30th, 1904), and which has proved itself so satisfactory.

The boiler plating generally is of 1-16th in. copper. The barrel is a piece of 3 $\frac{1}{2}$ ins. outside diameter solid drawn tube, and is riveted to the outside firebox wrapper and throat plate with flush rivets; these were made flush so as to give more room for the lagging. The boiler back and tube plate are brass castings, and these are screwed in with 1-16th-in. screws. The firebox is flanged and flush riveted, and tapers inwards slightly towards the crown; it contains five $\frac{1}{4}$ -in. cross water-tubes. The oval flue is flanged and riveted to the firebox, and the whole thoroughly well brazed, being afterwards tinned all over, both inside and out, as a safeguard for any tiny pin-hole which might have escaped observation. The flue at the smokebox end was carefully flanged over and sweated.

The firebox crown has two gunmetal bridge stays, with two gunmetal bolts through each, and screwed into lugs in the firebox crown. The sides of the



MR. S. L. THOMPSON'S MODEL, L. & S.W.R. LOCOMOTIVE. [see pages 492-495.]
For description

firebox and outside wrapper plate are stayed by nine $\frac{1}{4}$ -in. stays on each side, and with one at the throatplate and two in the back plate; there is also a stay through the centre of boiler from back to tube plate. The foundation ring is a brass casting, and riveted in position by 1-16th in. diameter rivets, the rivets inside being flush to allow of the fire bars to pass into the firebox freely. The foundation ring is provided with two lugs on each side to receive the bolts to attach the ashpan and fire bars. The firedoor ring is cast with the back plate, and the inner firebox is riveted to it by 3-32nds in. diameter rivets. The firebox door consists of two plates, and which slide in grooves. The fire bars are made of steel, and are filed to the proper shape and fit in a frame, which is held by the lugs on the foundation ring. The ashpan fits close up to the ring, and is held in position by two nuts and bolts from the fire bar frame; the damper to same is actuated by a steel lever and rod from the cab; this lever comes directly in front of the brake column; the rod from same to ashpan passes between the side frame and outside wrapper of firebox.

this blower has two very small holes in same, and when only air is pumped into the boiler, and this blower turned on, it will draw a taper flame through into the firebox 2 ins. away from the fire-door. The steam supply is taken from the dome to the smokebox by a $\frac{1}{4}$ in. diameter pipe, and to the cylinders by a $\frac{1}{2}$ in. pipe, and connected thereto by two unions. The exhaust pipe is brought through the footplate and to the inside of the smokebox by suitable castings, and taken directly under the funnel by a breeches pipe, the end of which is nozzled down slightly from the $\frac{1}{4}$ -in. pipe, the exhaust being very clean and sharp, giving a perfect draught when the engine is working without the blower. This exhaust is so arranged that the boiler may be removed without disturbing a single pipe. There is also a protector plate in front of the exhaust pipes, kept in position by a turn catch.

The smokebox was built up from sheet and brass castings, and all flush screwed, and is lined with asbestos sheet inside. The smokebox is attached to the boiler by means of four 5-32nd-in. studs and nuts. The door of smokebox is fitted with protector plate, and is hung on bands and gudgeons,

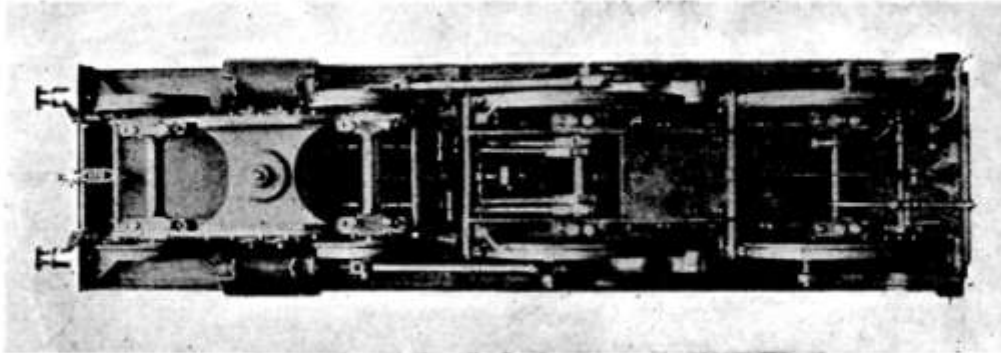


FIG. 7.—UNDERSIDE VIEW OF MODEL L. & S.W.R. LOCOMOTIVE.

The inner dome was made from a piece of $1\frac{1}{4}$ ins. diameter drawn copper tubing, and flanged out at the base to the shape of the boiler barrel, and screwed thereto. The dome crown has an angle ring and plate; the ring is screwed and sweated in, and the plate is secured by six $\frac{1}{4}$ -in. screws. The outer casing of dome was made similar, only with a semi-circular top, and is fastened down by a small nut screwed to a pin from the cap of the inner dome.

The boiler mountings consist of Ramsbottom safety valve set to blow at 70 lbs. (the boiler having stood a steam test of 103 lbs. per sq. in.). Water gauge, check valve, jet cock, and pressure gauge $\frac{1}{2}$ -in. dial to 100 lbs. The whistle on the cab roof is a dummy. The waste blow-off water from the water gauge is carried down by a pipe under the footplate and round by the left-hand steps. The water for filling is taken to the check valve from back of cab under the footplate, and is fitted with cock and union. The piping for the jet is taken down by the side of the wheel case and along the framing and under the smokebox, where it is taken through and coupled with a union to the ring blower which encircles the blast or exhaust pipe;

and fastens in the usual way with crossbar, turn and lock handles.

The funnel is a casting, and is turned all over; this shape of funnel was taken from the latest of the L. & S.W.R. locomotives, it being more to my taste than the plain funnel of the "580" class.

The boiler lagging is asbestos board with a cleading of hard rolled sheet brass, No. 26 gauge; this is in one piece, and was rather an awkward thing to fix, the gauge being too thick for easy bending; however, with softening it slightly, it finally took the form required. It is secured along the joint with 1-16th-in. screws, these screwing into a 1-16th-in. by $\frac{1}{4}$ -in. strip of brass attached to one edge of the cleading. The bands round the boiler are of brass, and have small angle pieces riveted to the ends, and are tapped to receive 1-16th-in. screws, which when screwed up pull the bands quite tight.

The footplating was cut from 1-16th-in. sheet brass, and has angle brass riveted round the edges. Immediately above the slide bars there is an opening cut for access to the crosshead; this has a cover plate secured by eight 1-16th-in. screws.

The cab plating, splashers, roof, &c., were cut from No. 20 gauge sheet brass, strengthened at the angles by angle brass. The plate for front of the cab is made in two pieces, and joined up by a cover strip. By having this plate in halves—and the cab roof is so arranged that it will slide off—it enables

plates and main side frames by 1-16th-in. screws. The beading round the edge of the cab is split brass tube, sweated on; there is also a flat strip of brass running round the wheel and crank splashers, and also on the cab roof at the front, and an angle brass on the top, and underneath at the back;

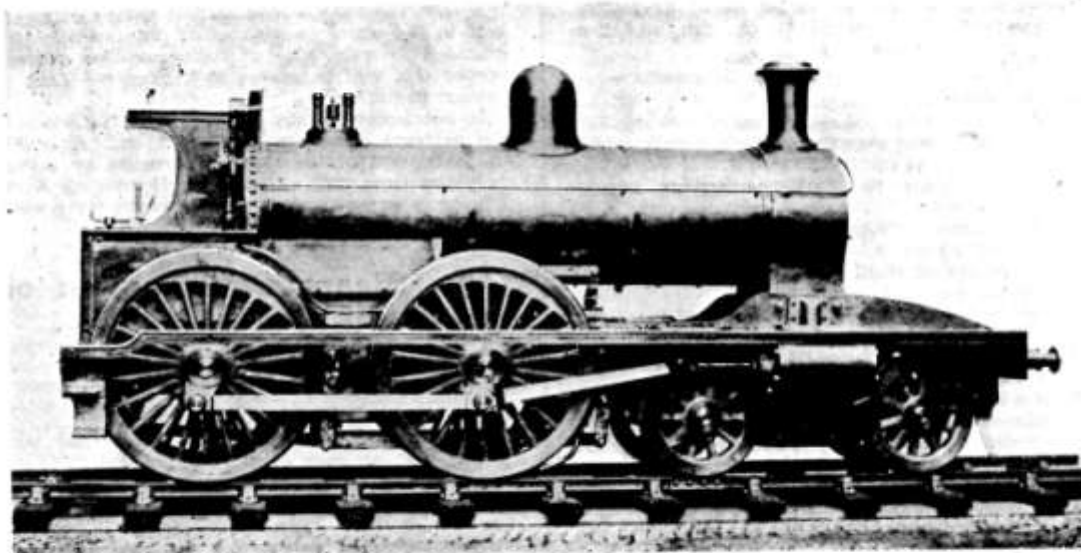


FIG. 8.—MODEL L. & S.W.R. LOCOMOTIVE, CAB SIDE AND WHEEL SPLASHERS REMOVED.

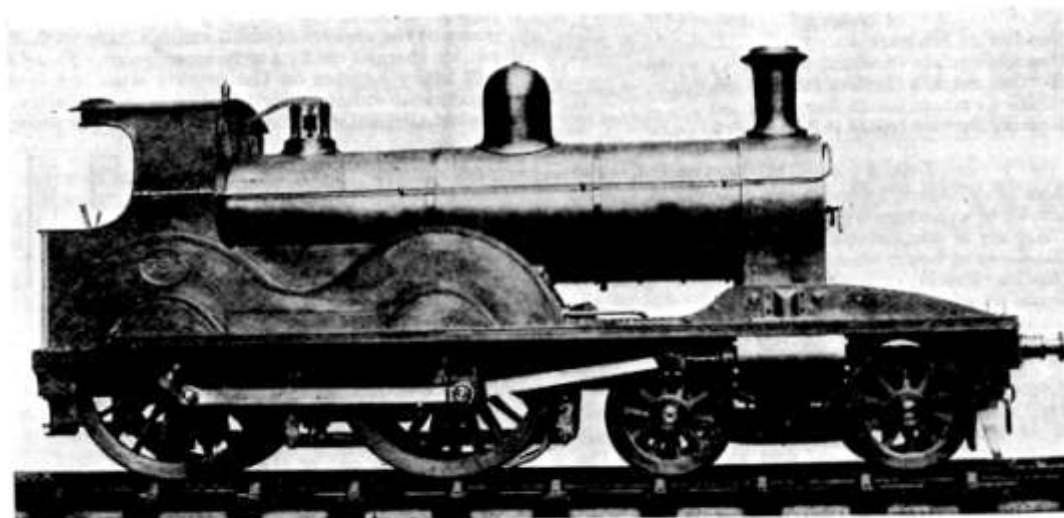


FIG. 9.—MR. S. L. THOMPSTONE'S MODEL L. & S.W.R. LOCOMOTIVE.

the whole of the cab and side plates to come away without difficulty by merely unscrewing a few screws; this is a convenience, and makes it a comparatively easy matter to pull off the boiler at any time, if found necessary for repairs, &c. The splashers, cab sides, &c., are screwed to the foot-

this gives a nice finish. The cab roof, as before mentioned, is movable; this slides by means of slotted lugs, which clip the angle brass round the top of cab, and give easy access to the fittings.

The spectacle glasses are fitted into turned brass bezels, and these are fixed in position by screws.

The number plates were filed out of sheet brass, and a beading sweated round; the figures were also filed out and soldered on.

The handrails are of 3-32nds-in. silver steel, and run round the boiler and smokebox through brass handrail brackets, which are screwed and sweated into the cleading, and screwed into the smokebox; the ends of the handrails pass through the spectacle plate, and have nuts on either side. There are also handrails on either side of the cab, and also hand pillars above the steps.

The following are the principal dimensions:—

Length over buffers, $24\frac{1}{2}$ ins.
 Length over buffer beams, $23\frac{1}{2}$ ins.
 Front buffer beam to centre of bogie, $5\frac{5}{16}$ ths ins.
 Bogie centres, $5\frac{1}{2}$ ins.
 Centre of bogie to centre of driving wheel, $8\frac{1}{16}$ ths ins.
 From centre of driving wheel to centre of trailing wheel, $6\frac{1}{2}$ ins.
 From centre of trailing wheel to end of buffer beam, $3\frac{9}{32}$ nds ins.
 Height to top of footplate from rails, $3\frac{1}{2}$ ins.
 Height to top of chimney, $10\frac{1}{2}$ ins.
 Height to centre of boiler, $6\frac{1}{2}$ ins.
 Width over footplate, $6\frac{3}{32}$ nds ins.
 Width between frames, $2\frac{57}{64}$ ths ins.
 Thickness of main frames, $\frac{1}{2}$ in.
 Diameter of boiler barrel, $3\frac{1}{2}$ ins.
 Diameter over lagging, $3\frac{7}{16}$ ths ins.
 Length of boiler without smokebox, $12\frac{1}{2}$ ins.
 Length of smokebox, 2 ins.
 Length of firebox outside, $4\frac{5}{16}$ ths ins.
 Length of firebox inside, $3\frac{13}{16}$ ths ins.
 Width of firebox outside, $2\frac{1}{2}$ ins.
 Width of firebox inside, $2\frac{1}{16}$ ths ins.
 Height of firebox inside, $4\frac{1}{2}$ ins.
 (This height comes about $1\frac{1}{16}$ in. below centre of boiler.)
 Number of fire bars, 13.
 Heating surface (firebox) .. 53 sq. ins.
 Heating surface (firebox tubes) 16 ..
 Heating surface (main flue) .. 40 ..
 Heating surface (main tubes) .. 16 ..
 Total 125 sq. ins.
 Bore of cylinders, $27\frac{3}{32}$ nds in.
 Stroke of cylinders, $1\frac{1}{2}$ ins.
 Diameter of coupled driving wheels, $5\frac{5}{16}$ ths ins.
 Diameter of bogie wheels, $2\frac{13}{16}$ ths ins.
 Driving wheels, 22 spokes.
 Bogie wheels, 10 spokes.
 Gauge of rails, $3\frac{1}{2}$ ins.
 Width between flanges on the inside of wheels, $3\frac{1}{2}$ ins.
 Weight of locomotive empty, 40 lbs.

The lamp brackets were cut from sheet steel, bent to shape and fixed by screws on the front platform and footplates, and one on the top of the smokebox.

The buffer beams are of $\frac{1}{2}$ -in. sheet brass, and strengthened to the side frames by stout cast brackets, to which are attached the spring buffers, and draw-hook and chain; this hook has rubber washer packings, so as to give a little when subjected to a sudden pull. The back buffer beam has squares riveted on to take the ends of the tender buffers. Preparation is also made for the tender draw link, a steel pin and bracket being fixed under the footplate to receive it.

The step brackets are castings, the steps themselves being bent up from sheet brass and riveted thereto. The line clearers were cut from mild steel plate and bent to shape and fixed by three 3-32nds-in. steel screws.

The locomotive works exceedingly well with only compressed air supplied by a cycle pump through the water gauge blow-off pipe. It will be seen by this that the engine requires but little air, as the hole in the water gauge cock is only small. It is intended to make a set of friction rollers, when a proper test will be made, as I have no track at present to run on.

In conclusion, I may mention that the whole of the patterns, drawings, turning, fitting, &c., with the exception of the taps, were made by myself in leisure time, and which is purely amateur work, I being in no way connected with engineering work.

The Steam Consumption of Small Steam Engines.

By J. S. V. BICKFORD.

(Continued from page 475.)

A FEW days later I ran a short trial with high-pressure cylinder bored out to $2\frac{1}{2}$ ins. Steam consumption about 50 lbs. per brake horse-power hour, and pressure still excessive for the work. Bored out the port holes in valve case from $\frac{1}{2}$ in. to $\frac{1}{4}$ in., and the pressure immediately fell to what it should be. This is a very instructive course of experiments, as indicating the absolute necessity of giving decent port area for exhaust. Of course, most steam-engine engineers are already aware of this, but many of the makers of small engines have to find it out for themselves by costly experience. There are still many engines on the market with absolutely insufficient exhaust ports. The steam velocity in the exhaust should never exceed 100 ft. per second.

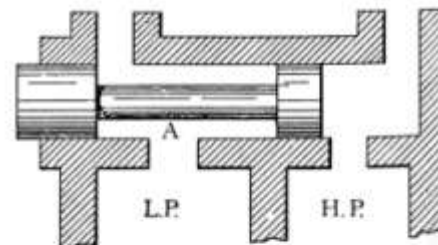


FIG. 3.

The boring out of the high-pressure cylinder so weakened it that it cracked, and as we were in a hurry we adopted a new arrangement of valves, which it was hoped would give better results as giving shorter ports, less clearance, and a good port opening. Fig. 3 shows a sketch of the arrangement. It may be said that it worked very well indeed for a long time—in fact, until we abandoned it in favour of a three-cylinder engine. The cylinders were as before, $2\frac{1}{2}$ ins. and 4 ins. stroke; cranks, pistons, &c., identical in both cases. The piston valve A, lying on top of the cylinder covers and parallel to

Basingstoke and District Model Engineering Society Limited

Most of you will have heard by now that the conversion of the Society from an unincorporated body into a Company Limited by Guarantee (a legal entity) has been completed. Our Certificate of Incorporation was issued by Companies House on 4th March 2014.

The change was discussed at length at the last two AGM's and a series of meetings was held by the Committee with a generous solicitor who gave his time to us at no charge. Numerous other clubs and societies such as ourselves have already made this change, some of them quite a little while ago. The essential reason for converting is that in the event of winding up B&DMES, the maximum exposure to liability of each member is now £1.00. Previously it was legally possible for creditors to pursue any or all members without limit. In addition, the lease with Basingstoke and Deane Borough Council for the clubhouse and the land on which the track is situated was between three individuals (acting as Trustees for the club) and the council. This was not a satisfactory or reasonable state of affairs. In terms of the everyday activities of the club the conversion has very little effect. The Treasurer and Secretary will feel the most change since Companies House requires by law a certain amount of data each year and this must be submitted in a certain pre-determined way. The Committee is now called a Board of Directors, but its activities and powers continue to be controlled by the Articles of Association which is based on our former Constitution and a number of standard paragraphs arising out of legislation. We do not have to be too precious in relation to adding the word 'Limited' to our name every time it comes up in everyday conversation. Our new status is only relevant when we enter into contracts with other legal entities. B&DBC has already been informed and our letter heading has been modified.

Our solicitor friend is looking into the terms of our lease in the light of our new legal status, and we look forward to a simpler and fairer agreement with the council in time for re-negotiation of the lease before it expires in February 2016.

Brian Hogg, Company Secretary

Chairman

It is with regret that I must announce the resignation of Bob Lovett as Chairman, and also as a director of B&DMES Ltd. Bob resigned with immediate effect on 14th April 2014. He took on the role at the last AGM after much persuasion. At that time he made it clear that his personal circumstances, both at home and at work, were such that the time available to him was both limited and unpredictable. In the event a potential house move to Yorkshire became a reality sooner than anticipated and he felt that he could no longer act as Chairman in the way that he would wish.

Bob's departure is unfortunate in that he was just getting to grips with putting some stability and direction into the club, following a long period without a Chairman. We thank him for his efforts and wish him well in his new surroundings. If any member feels that he could take on the role of Chairman (the sooner the better) would he please get in touch with a director. Anyone who is not currently a director can be co-opted onto the Board. We really cannot afford to be without a Chairman for a long period of time.

Brian Hogg, Company Secretary.

Basingstoke & District Model Engineering 2014 Calendar (Issue 1)

Jan-14

1 Members Day (Wednesday)
7 Meeting Night
18/19 Maintenance Weekend
21 Bits & Pieces Evening

Feb

4 Meeting Night
9 Driver/Public Running Training (Sun)
15/16 Maintenance Weekend
18 Meeting Night

Mar

1/2 Maintenance Weekend
4 Meeting Night
16 Driver/Public Running Training (Sun)
18 Meeting Night

April

1 Meeting Night
12/13 Miniature Steam Rally
15 Bits & Pieces Evening
21 Public Running (Easter Monday)
29 Bring & Buy Evening

May

4 Public Running
13 Stationary Engines
18 Visitors' Open Day (Sun)
27 Meeting Night

June

1 Public Running
10 Bits and Pieces Evening
21 Members Running & Barbecue(Sat)
24 Meeting Night

July

6 Public Running
8 Meeting Night
13 Members Running Day (Sun)
22 Meeting Night

Aug

3 Public Running
5 Bring & Buy Evening
19 Meeting Night

Sept

2 Meeting Night
7 Public Running
14 Visitors' Open Day (Sun)
16 Meeting Night
27 Members Running Day (Sat),
incl. Fish & Chip Supper
30 Meeting Night

Oct

5 Public Running
12 Members Running Day (Sun)
14 Bits & Pieces Evening
Halloween Public Running (Sat
Evening)
25
28 Meeting Night

Nov

11 Bring & Buy Evening
16 Members Running Day (Sun)
17-21 AGM (Date to be decided)
25 Meeting Night

Dec

7 Public Running
9 Meeting Night
23 Meeting Night

Public Running 11am to 4pm (setup from 9:30am) Sunday, unless stated otherwise

Member's Running days 10am to 5pm

Tuesday Evening Meeting 7pm to 9pm, with optional members running afternoon

Maintenance Weekends - Working parties to keep track & site shipshape. Check notice board for details

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Jon Evans
Treasurer

Who's Who

Chairman
Vice Chairman
Secretary
Treasurer

Bob Lovett
Colin Stubbs
Brian Hogg
Jon Evans

Committee Members

Barry Spender	Member
Dave Andrews	Member
Darren Davis	Member
Steve Newell	Member

Project Leaders

<i>Catering manager</i>	Eric Widdowson
<i>Electrical Work</i>	Jon Evans
<i>Library</i>	Ken Jones
<i>Station Buildings & contents</i>	Dave Andrews
<i>Publicity</i>	Dave Mitchell
<i>Track maintenance</i>	John Hutson
<i>Site maintenance</i>	Eric Widdowson & John Neal
<i>Traction Engine Track</i>	Austin Lewis
<i>Webmaster</i>	Mike Bowman
<i>Newsletter</i>	Austin Lewis