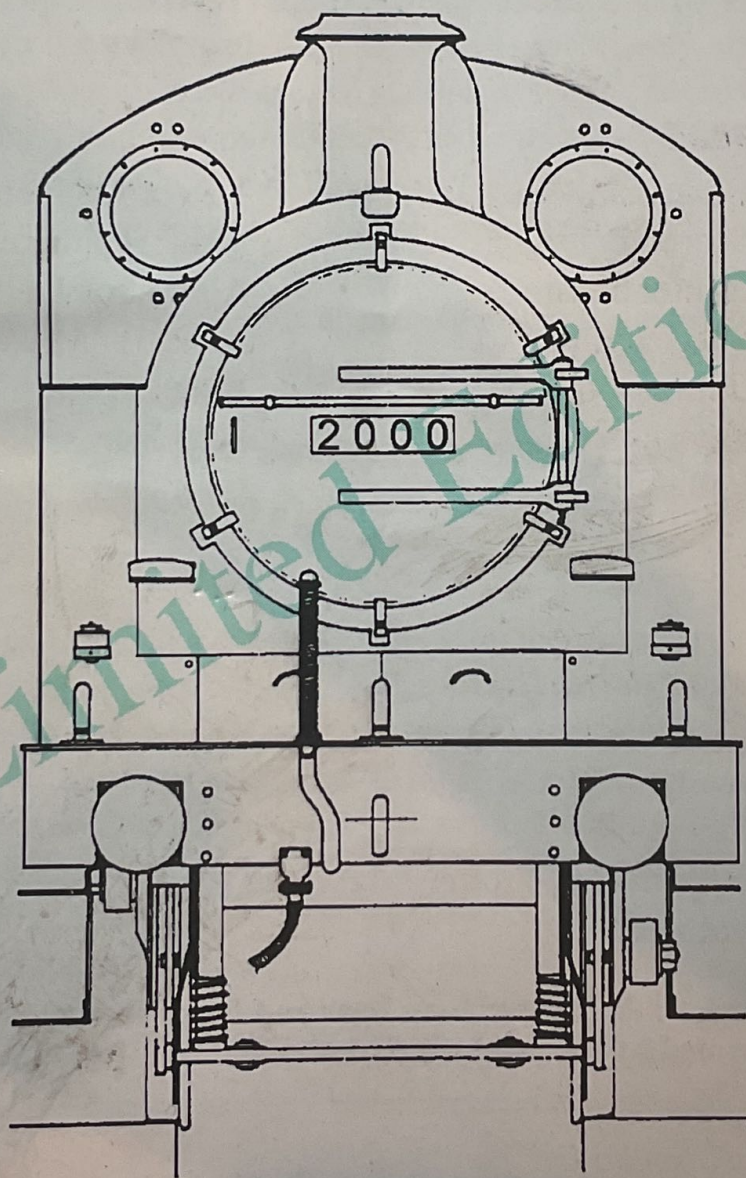


The 32nd International Model Locomotive Efficiency Competition



Hosted by Leyland Society of
Model Engineers

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Leyland Society of Model Engineers

International Model Locomotive Efficiency Competition *for the* Martin Evans Challenge Trophy

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Welcome To Worden Park

May I, on behalf of the Leyland Society of Model Engineers extend a warm greeting to visitors and competitors alike and welcome you to **I.M.L.E.C. 2000**, the 32nd International Model Locomotive Efficiency Competition.

Having been fortunate enough to attend many **I.M.L.E.C.**'s over the last few years I have seen the event gather momentum as the quality and enthusiasm of its competitors seems to increase each successive year. These attributes, coupled together with the resourcefulness and commitment of earlier host societies, are a strong indicator of the popularity of **I.M.L.E.C.** and no doubt confirm the competition's continuance well into the future.

Leyland Society has on 3 previous occasions been privileged to hold the event, in 1982, 1989 and 1993 respectively and are proud to do so again in this landmark year. Appropriately we are using the number 2000 as a theme and have temporarily adopted the Deely tank engine as a motif for the competition. It was one of the few classes of locomotive that included 2000 as an official company number.

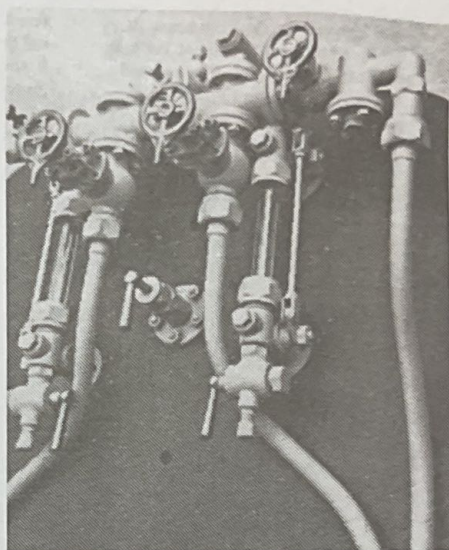
An event such as **I.M.L.E.C.** can often provide the necessary impetus for a Model Engineering Society to complete all those outstanding rolling stock, track repair, site maintenance jobs that have needed attention but are frequently given a low priority. In this aspect we at Leyland are no different. Our members have been hard at work in one capacity or another getting things ready since early last year. From planning to painting and from organising to ordering, a great deal of effort has been put in by all those concerned, the results of which we hope you enjoy this weekend.

In closing, I would like to wish all of the competitors - the very best of luck, to all of our visitors and honoured guests - I hope you have a pleasant and interesting weekend, and to all Leyland members - a big thank you, with a reminder that the job isn't finished until the last fire goes out !

John W. Barr
Chairman

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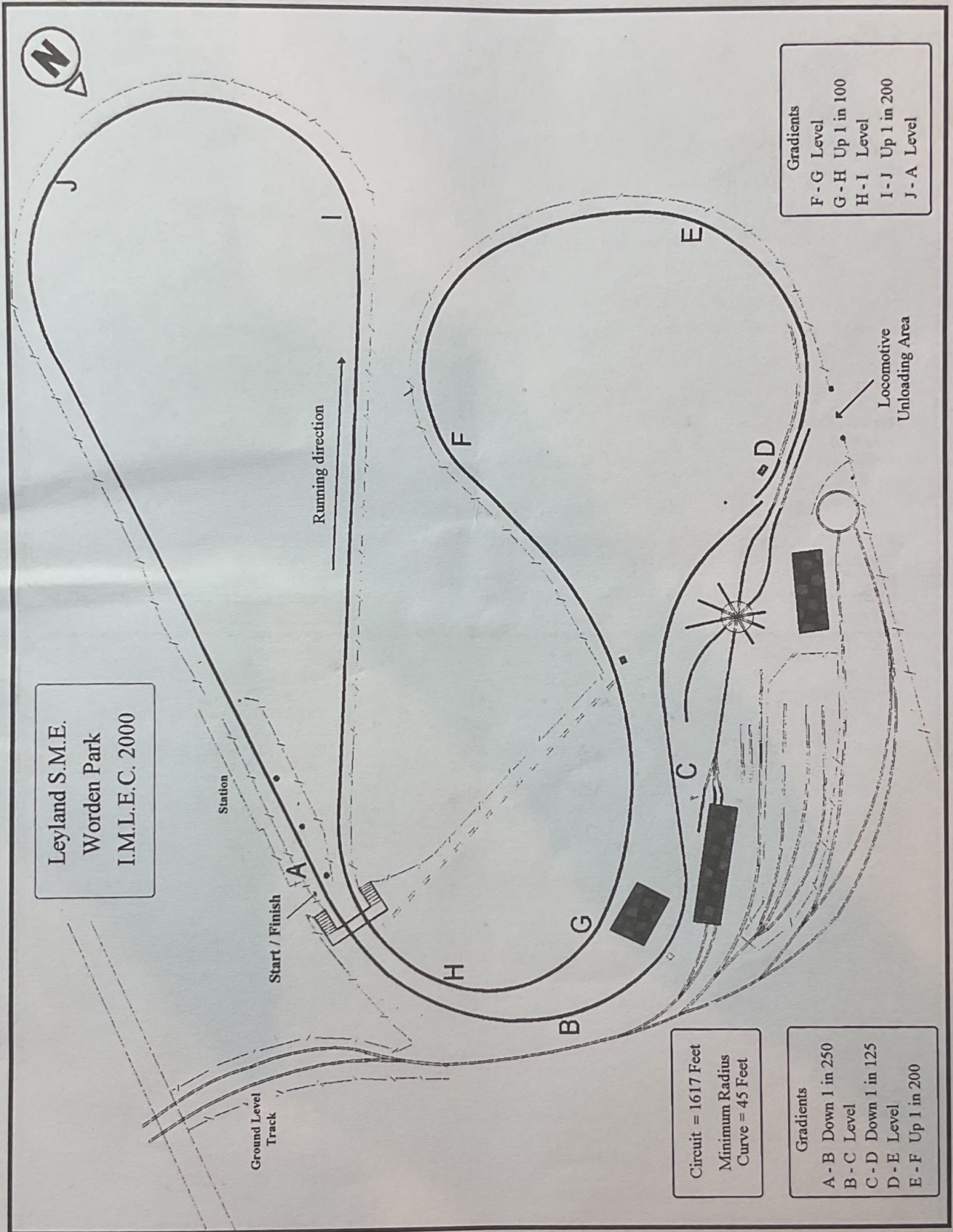
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DIAMETERS

COPPER cont.

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ANGLES

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STAINLESS cont.

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BOX SECTION STRUCTURAL

TUBE SEAMLESS

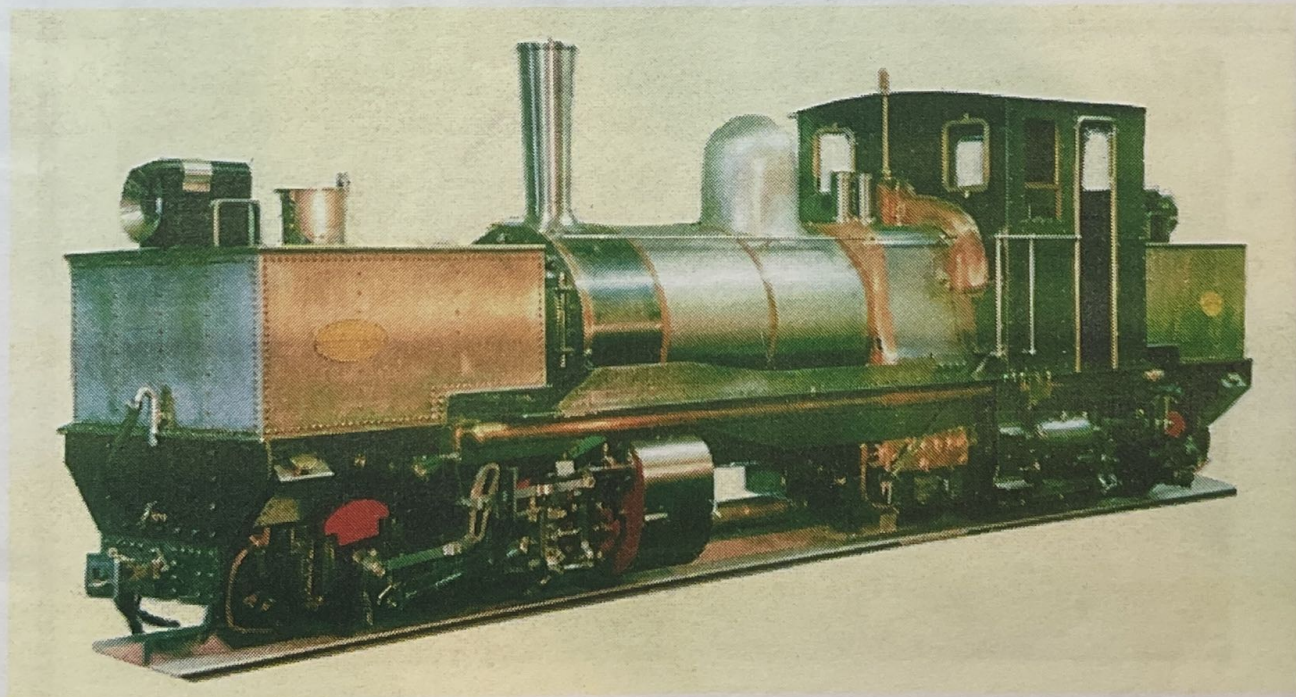
TUBE MECHANICAL

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*Paul Tompkins at the regulator of Bill Dwyer's
3½" gauge A4 "SILVER FOX"*



John Hartup's Beyer-Peacock Garratt K class 0-4-0 - 0-4-0



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Chris Summersal at the controls of his LNER 2-6-4 Tank

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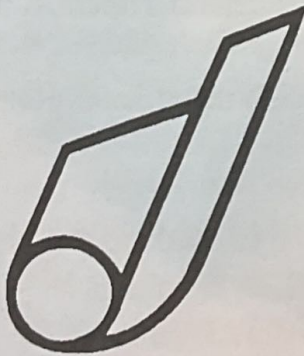
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Rules for Competitors

1. On arrival, competitors will be required to register at reception where all necessary information concerning the day's events will be available, including the approximate time of the run. One hour before the start of the run the competitor will be called to prepare his or her locomotive and will be allocated an Observer.
2. Two sizes of coal will be available in pre-weighed bags, the driver may select the size required which will be weighed in his or her presence and the weight entered on the run sheet.
3. As much charcoal, wood and paraffin as required will be available in order to raise steam. The change to weighed coal is at the driver's discretion, however, the driver must have a good coal fire before going out onto the track. No fuel other than the weighed coal will be taken onto the track.
4. The train will be prepared in the steaming bay with the dynamometer car and sufficient empty passenger cars to carry the number of passengers the competitor has nominated.
5. The Track Marshal will advise the driver when to go onto the track and will assist in coupling your locomotive to the train.
6. The locomotive and train will be driven light, anti-clockwise, to the station with just the Driver and Observer on board.
7. The passengers will board at the station, from where the Official Timed Run will start.
8. The Distance and Work Done measurements will start from the steaming bay area, therefore work done during the light run up to the station will be credited to the timed run.
9. Immediately before the timed run the driver will be asked to confirm that the load is to his or her satisfaction so that any adjustments may be made.
10. The Timekeeper will advise the driver when to start the timed run.
11. The duration of the run is a nominal 30 minutes. No time allowance will be made for stops other than derailment and other non locomotive related occurrences. A competitor may opt to stop once 25 minutes have been completed but the run must terminate in the station. Any competitor not completing 25 minutes will be deemed to have retired. A lineside clock will be provided so that drivers may see the progress of their run. Drivers will be advised when they have ten and five minutes to go and when on the last lap. The total period of locomotive related stoppage during the run must not exceed eight minutes. If this is exceeded the driver will be deemed to have retired.

12. The run will end at the station. Any competitor stopping short of the station because of lack of steam must raise sufficient steam to bring the train into the station before the run is deemed to be completed. All recordings will end in the station.
13. Reversing back to the station in order to terminate the run will not be allowed.
14. Passengers may be dropped off at any time during the run but additional passengers may not be taken on board once the timed run has started.
15. The Observer will supervise the "off loading" of passengers only on instruction from the driver.
16. Passenger cars must not be dropped or the train divided during the timed run, the load may only be reduced by dropping passengers.
17. The maximum speed is 10 miles per hour. The Observer will tell the driver when this speed is being approached and will give a warning if it is exceeded. Three such warnings will result in disqualification.
18. Drivers must not lean on the tender or locomotive in such a way as to increase the draw bar pull, infringement will result in disqualification. The use of the hand pump is not permitted except in emergencies, in which case the locomotive must be retired.
19. Water will be handed to drivers as required in suitable containers so that they may top up without stopping.
20. If the locomotive is fitted with working sanding equipment it may be used. No other sanding will be allowed.
21. At no time during the run may any assistance be given, all work done must be provided by the locomotive.
22. All unused coal will be collected and weighed in the driver's presence. No allowance will be made for unburnt coal in the firebox.
23. The adding of ballast, including water, fitted externally to the scale outline, or likely outline of a freelance model, is not allowed.
24. The locomotive must be fitted with a spark arrestor. This is the driver's responsibility and the spark arrestor may be fitted externally or internally. If the spark arrestor is fitted inside the smoke box, it must be made available for inspection on request.
25. The decision of the Chief Judge is final on all matters
26. Have a good time! The Competition Organisers wish everyone "Happy Steaming".

The competitors and their locomotives. (Not in order of running)

Ronald Strachan's L.N.E.R. V2 was built using general arrangement drawings from the National Railway Museum. The castings for the wheels and cylinders were obtained from Mr. M Breeze and the boiler is a shortened version of Don Young's A3. This 5" gauge 2-6-2 will be making it's first appearance in the competition and Ron will represent **Fylde Society of Model Engineers**.

As on many previous occasions, **Bristol Society of Model & Experimental Engineer's I.M.L.E.C.** entry will this year be driven by **Barbara Milton**. A Martin Evans designed *Simplex*, built by Mr. Laughborough is now owned by **C S Culverhouse**. Little is known of the history of this locomotive except that it was entered in the competition some twelve years ago. No doubt, given the opportunity, Barbara will get good results from this extremely popular tried and tested design.

Competition Note

At the time of printing, the above competitors are 1st. and 2nd. Reserves and therefore are not listed in the running order. The organisers of I.M.L.E.C. 2000 will make every effort to ensure a full and continuous programme for the spectator, but cannot guarantee to run one or both Reserves.

Brian Eatock makes his second appearance in the competition, with his 3.5" Black Five. Built between 1991 & 1996 to L.B.S.C.'s *Doris* design, the locomotive is fitted with P.T.F.E. piston valves. Although troubled by lubrication problems, last year's run at Northampton earned Brian a creditable 15th place. Brian is representing **Chesterfield Society of Model Engineers**.

Terry Booth has *scaled up* Don Young's *Elaine* design, to produce a 5" gauge version of the Southern Railway H15 class 4-6-0. Completed eight years ago, the locomotive was driven by Terry at Kinver's 1998 I.M.L.E.C. and placed 17th. In this years competition, Terry will represent **Leeds S.M.E.E.** (Withdrawn)

Although **Paul Tompkins** may well be our youngest competitor, he could almost lay claim to the title *I.M.L.E.C. Veteran*. Having competed in every I.M.L.E.C. since 1995, our competition this year will see Paul driving a (very) recently completed L.B.S.C. *Minx*. Paul makes the journey from the Guildford area but registers as a **Private Entry**.

Another I.M.L.E.C. regular is **Bryan Cantwell** of **Urmston & District Model Engineering Society**. Bryan has taken advantage of the more recent rule changes, in order to re-enter his 1977 built G.W.R Saint class *Redgauntlet*. The locomotive's previous I.M.L.E.C. appearances were at Bedford in 1980 and at Bournemouth 1981. This 5" gauge model was built with the aid of 4mm scale line drawings, and has to date, covered well over 3500 miles!

Continued...

Exclusive to visitors of IMLEC

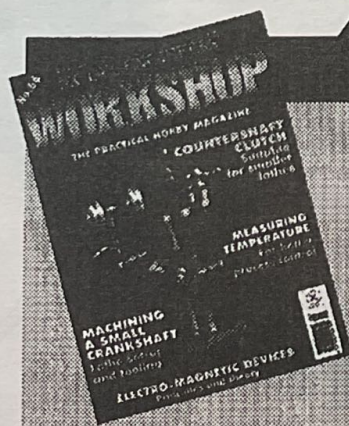
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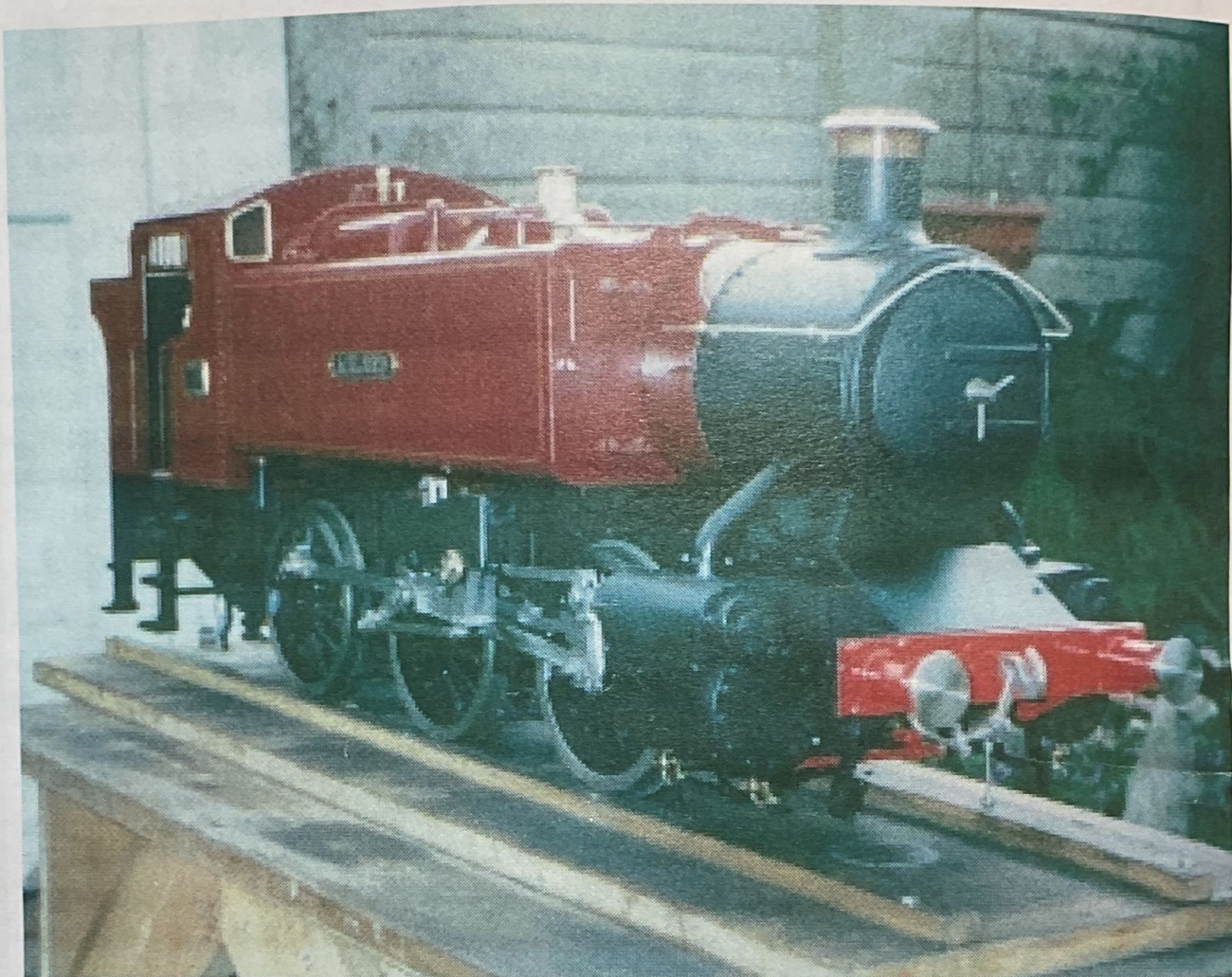
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Jim Elliotts 5" gauge "SPEEDY"*

I.M.L.E.C 2001

See you at Bristol next year !

The competitors (continued)

Bill Dwyer's 3.5" gauge L.N.E.R A4 pacific was built twenty five years ago from Bill's own drawings. All the wheels were fabricated, as were the three cylinders. Bill took six years to build the engine and has since built a 5" gauge J class in half that time! This year's event will be the locomotive's second I.M.L.E.C. appearance, having been placed 14th at Northampton in 1996. Bill has registered as a **Private entry**.

Paul Clarke will be driving a 3.5" gauge *Britannia*. This locomotive, built by the late Fred Kirby in 1954, saw many years of passenger hauling before being re-built eight years ago. The cylinders have been re-bored and new driving axles fitted. The engine and tender are now fully equipped with roller bearings. This locomotive, the oldest model in the competition by a considerable margin, is owned by and represents **Southampton Society of Model Engineers**.

Ex footplate man **Michael Collyer** remembers with affection the 2-8-0's designed by *Sir Nigel Gresley* for the G.N.R. in 1912. These heavy freight engines were hard workers and had a long life, the last of the class being scrapped in 1952. Mike's own 5" gauge model (built to the design of Martin Evans) reflects well the character of the originals, having run on over 30 different tracks and travelled many hundreds of passenger hauling miles. Mike's last I.M.L.E.C. appearance with this locomotive was at Bristol in 1984. For this year's competition, Mike's locomotive is registered as a **Private entry** and will be driven by his younger son **Brian Collyer**.

Carrying the hopes of **Brighouse and Halifax S.M.E.E**, is **David Wainwright**. Dave is an experienced driver who has built several model locomotives including a 5" gauge L.M.S.5XP. Dave however will be driving his L.N.E.R. *B1 Mayflower* for this year's event and hoping to better the 4th place he achieved with this engine at Kinver in 1995. Built to the design of Martin Evans, the locomotive has many additional details observed from the preserved full size engine.

Making it's first appearance at I.M.L.E.C. is **John Cavalier's** 5" gauge ex-G.W.R 1500 class *Speedy*. This popular design by L.B.S.C. takes advantage of piston and valve modifications as described by the late K N Harris in the April 1966 *Model Engineer*. John, a Yorkshire man, took four years to construct the model locomotive and describes his firing technique as *little and often*.

L.N.E.R. V2's have often been described as *the engines that won the war*. Representing **Kendal Model Live Steamers**, **Stan Jackson** has used Michael Breeze's original design, incorporated Martin Evans's modifications and added details from the preserved *Green Arrow*, to produce *Kings Own Yorkshire Light Infantry*. Stan's 5" gauge model was completed in 1993 and reflects the ruggedness and reliability of Gresley's original design, as around one hundred miles per year have been run, so far with very little maintenance.

Continued...

The competitors (continued)

Last year's winner **Jim Elliot**, will attempt to retain the *Martin Evans Trophy*, driving, once again, his 5" gauge 0-6-0 T, *Speedy*. Completed in 1986 to L.B.S.C.'s original design, the locomotive now has radiant superheaters within a new 100 p.s.i. boiler. Modifications to the valve events and a re-draughting of the front end have also paid good dividends and returned Jim a 1.789% efficiency figure in last year's event. Jim competes every year in the Welsh competition, besides being a regular passenger hauler at his home club which he now represents, **Staines Society of Model Engineering**.

Dave James, representing **Swansea Society of Model Engineers**, enters the competition with the first example of a *Winson* kit built 5" gauge *Britannia*. Completed in August 1999, *Polar Star* is said to be the very first *Winson* kit locomotive to *steam*. Dave has modelled the 4-6-2 in its pre 1955 condition, at which time *Polar Star* was involved in a serious accident near Didcot. As a result of the accident, smoke-deflector handrails were removed in an effort to improve the driver's visibility on these large *Pacifics*.

After an absence of ten years, **Lionel Flippance** returns to the competition driving his three times winning engine *George Eveniss*. Based on a proposed design by B.R. in the early 50's, this freelance 2-8-2 set new records of model locomotive efficiency in the late 80's and a figure of 4.392% remains unchallenged to this date. Using a *Britannia* boiler fitted with a stainless steel arch, power is delivered to the two 2" bore cylinders via eight radiant superheaters. The gauntlet has been thrown down with this machine but Lionel is convinced that his results can be bettered. He is currently building three more locomotives to the same design but with internal differences in order to compare and hopefully improve efficiency! Lionel will represent the **S.M.E.E.**

Nigel Potter comes south from Carlisle with a 3.5" L.N.E.R. *B2* class 4-6-0. The full size original engine was one of ten *Thompson* rebuilds of *Gresley's B 17* class. When 2871 fell due for heavy repairs in 1945, a standard *B1* boiler was fitted and the inside cylinder removed in an attempt to ease maintenance. Nigel's model was completed in 1994 and has been entered in the *Stephenson Trials* each year to date, winning the *Vest Shield* for best 3.5" locomotive in 1999. The engine is used regularly for passenger-hauling on Nigel's club track, West Cumbria Guild of Model Engineers.

Making the somewhat longer journey from **New Zealand**, **Jim Woods** has been burning the midnight oil in order to complete his 5" gauge 2-4-0 T *Mona*. This Isle of Man loco is built to the Mike Casey design and is fitted with steel tyres and a four element radiant superheater. Jim has followed I.M.L.E.C. for many years through the pages of *Model Engineer*. He is the current holder of the *New Zealand (SI)* trophy and looks forward to competing with a dynamometer car as opposed to the old *weights, distance & coal used* formula. Besides his home club, **Otago Model Engineering Society**, Jim will also represent **Isle of Man Society of Model Engineers**.

Continued...

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I.M.L.E.C. 2000 Running Order

Saturday 8th July

| RUN NUMBER | TIME | LOCOMOTIVE | GAUGE (INCHES) | WHEELS | COMPETITOR | SOCIETY |
|------------|-------|----------------------------|----------------|--------|--|---------------------------|
| 1 | 09.00 | "BLACK FIVE" | 3.5 | 4-6-0 | BRIAN EATOCK | CHESTERFIELD |
| 2 | 09.40 | L.N.E.R. V2 | 5 | 2-6-2 | RON STRACHAN | FLYDE S.M.E. |
| 3 | 10.20 | "SWEET PEA" | 5 | 0-6-0 | FRANK NIXON <i>Driver Paul Pavier</i> | PRIVATE ENTRY |
| 4 | 11.00 | G.W.R.SAINT "RED GAUNTLET" | 5 | 4-6-0 | BRYAN CANTWELL | URMSTON & DISTRICT S.M.E. |
| 5 | 11.40 | G.W.R. 45xx "FIREFLY" | 3.5 | 2-6-2 | GLYN WINSALL | RUGBY S.M.E. LTD |
| 6 | 12.20 | "MINX" | 5 | 0-6-0 | PAUL TOMPKINS | PRIVATE ENTRY |
| 7 | 13.00 | L.N.E.R. B2 | 3.5 | 4-6-0 | NIGEL POTTER | PRIVATE ENTRY |

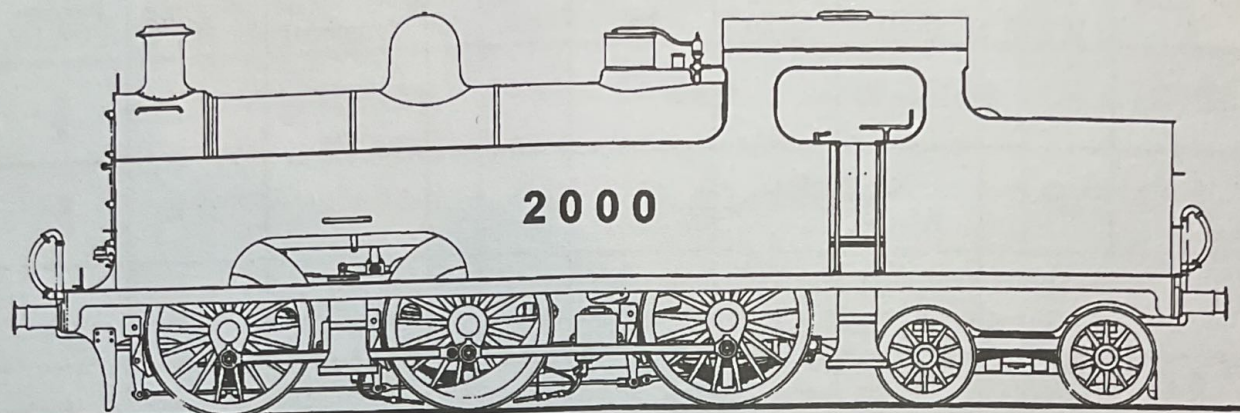
13.40 DEMONSTRATION FREIGHT TRAIN G.L.5. MAIN LINE SOCIETY

| | | | | | | |
|-----------|-------|----------------------------|-----|-------|---|----------------------------|
| 8 | 14.20 | L.N.E.R. A3 "GRAND PARADE" | 5 | 4-6-2 | F JOHANSEN <i>Driver: Dennis Postlethwaite</i> | WIRRAL S.M.E. |
| 9 | 15.00 | "BRITANNIA" | 3.5 | 4-6-2 | PAUL CLARKE | SOUTHAMPTON S.M.E. LTD |
| 10 | 15.40 | "NIGEL GRESLEY" | 5 | 2-8-0 | MICHAEL COLLYER <i>Driver Brian Collyer</i> | PRIVATE ENTRY |
| 11 | 16.20 | L.N.E.R. A4 | 3.5 | 4-6-2 | BILL DWYER | PRIVATE ENTRY |
| 12 | 17.00 | L.N.E.R. V2 | 5 | 2-6-2 | STAN JACKSON | KENDAL MODEL LIVE STEAMERS |
| 13 | 17.40 | G. & S.W.R. No 9 | 5 | 0-6-0 | WALLACE AITKEN | ROLLS ROYCE GLASGOW |
| 14 | 18.20 | BRITANNIA "COEUR-DE-LION" | 5 | 4-6-2 | LEONARD STEEL | GUILDFORD S.M.E. |

| Loading (persons) | Running time (mins) | Distance run (feet) | Total work (ft.lb) | Average drawbar hp | Coal Used (lb) | Specific fuel consumption (lb/dbhphr) | Thermal efficiency (%) | Final Position |
|-------------------|---------------------|---------------------|--------------------|--------------------|----------------|---------------------------------------|------------------------|----------------|
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Midland Railway Deeley "Flatiron" 0-6-4 Tank



Major Dimensions

Driving wheel - Diameter 5ft 7in; Bogie wheel - Diameter 3ft 1in;
Boiler - Deeley class H1, 242 tubes; Working pressure - 175lb / sq in;
Heating surface - Firebox 125 sq ft; Cylinders - 18¹/₂in x 26in;
Tank capacity - 2,250 gallons; Coal capacity - 3¹/₂ tons;
Weight in working order - 72 tons;
Length of over buffers - 40ft 40¹/₂in.

Samuel Waite Johnson retired from the position of Midland Railway Locomotive Superintendent in 1903 to be succeeded by Richard Mountford Deeley who took office in 1904 after 29 years working his way up through the ranks. One of the first tasks Deeley performed was to further develop the compound type 4-4-0 which Johnson had introduced in 1902 resulting in the classic "Midland Compound". Deeley also drew up several ideas for larger tank engines to supplement Johnson's designs of passenger tank, with the 'Flatiron' 0-6-4 tank being the end result. The 'Flatiron' is so nicknamed because of its long side tanks, whilst 'Hole-in-the-walls' and 'Pom-Poms' were other nicknames given to them by various Midland enginemen. A total of forty engines were built at the Midland Railway's Derby works, the first emerging in April 1907 and the remainder following the same year.

It is often suggested that these locomotives were introduced to replace Johnson 0-4-4 tanks on suburban services, particularly the heavier trains in the Birmingham and Manchester areas, but in fact the first twelve were allocated to Heaton Mersey and Trafford Park sheds.

Here they replaced a number of Johnson's '2441' class 0-6-0 tanks that had been working Manchester suburban trains since 1902. Other examples were to be found in the Birmingham area and were allocated to Saltley, Bourneville and Redditch sheds for working trains south of the city.

A number of locomotives were moved to other lines for trials, but fared no better than the locomotives native to those lines and were soon returned to the Midland. In 1911 No 2023 was tried on the Somerset and Dorset and in 1913-14 six (numbers 2004, 2011, 2013, 2024, 2034 and 2035) were trialled on the London, Tilbury and Southern section of the Midland (the LT and SR was taken over by the Midland in 1912). The 'Flatirons' proved unsuccessful on both passenger and goods trains when compared to the 4-4-2 and 0-6-2 tanks respectively of the Tilbury and by 1915 all had been returned to the Midland system proper.

As built, the 'Flatirons' were all fitted with standard Deeley class 'H1' boilers with a round top firebox but between 1920 and 1927 were rebuilt with the Fowler G7's Belpaire boiler, extended smokebox and superheaters. They were indeed very powerful tank engines, but after rebuilding were found to be unsteady at high speeds and ran better bunker first. This led to a number of derailments, one of which resulted in the driver's death (number 2023 derailed at Ashton-under-Hill in 1935) and as a consequence the LMS imposed a 45 mph speed limit upon them. At this time the new Stanier 2-6-2 tanks were starting to emerge from Derby works and withdrawal of the 'Flatirons' commenced in 1935. Surviving engines were used on goods trains, shunting and so on, but by the end of 1938 all had been withdrawn.

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I.M.L.E.C. 2000 Running Order

Sunday 9th July

| RUN NUMBER | TIME | LOCOMOTIVE | GAUGE (INCHES) | WHEELS | COMPETITOR | SOCIETY |
|------------|-------|--------------------------------|----------------|---------------|------------------|--|
| 15 | 09.00 | "BLACK FIVE" | 3.5 | 4-6-0 | PAUL MASSAM | SOUTHPORT S.M.E. |
| 16 | 09.40 | "BLACK FIVE" | 5 | 4-6-0 | PHILIP PRESTON | LEYLAND S.M.E. |
| 17 | 10.20 | G.W.R.15xx "SPEEDY" | 5 | 0-6-0 | JOHN CAVALIER | PRIVATE ENTRY |
| 18 | 11.00 | "GREAT NORTHERN" | 3.5 | 4-6-2 | EDDIE GIBBONS | CITY OF SUNDERLAND S.M.E. |
| 19 | 11.40 | BRITANNIA "POLAR STAR" | 5 | 4-6-2 | DAVE JAMES | SWANSEA S.M.E. |
| 20 | 12.20 | L.N.E.R. B1 "MAYFLOWER" | 5 | 4-6-0 | DAVE WAINWRIGHT | BRIGHOUSE & HALIFAX |
| 21 | 13.00 | L.N.E.R. L1 | 5 | 2-6-4 | CHRIS SUMMERSALL | THE 50D ASSOCIATION |
| 22 | 13.40 | L.M.S. PATRIOT | 3.5 | 4-6-0 | KEN ELWOOD | W. CUMBRIAN GUILD OF MODEL ENGINEERS |
| 23 | 14.20 | K CLASS BEYER PEACOCK GARRATT | 3.5 | 0-4-0 + 0-4-0 | JOHN HARTUP | LANCASTER & MORCAMBE M.E. SOC. LTD |
| 24 | 15.00 | ISLE OF MAN TANK ENGINE "MONA" | 5 | 2-4-0 | JIM WOODS | OTAGO (NEW ZEALAND) ISLE OF MAN S.M.E. |
| 25 | 15.40 | B.R. PROPOSED CLASS 9 | 5 | 2-8-2 | LIONEL FLIPPANCE | S.M.E.E. |
| 26 | 16.20 | G.W.R.15xx "SPEEDY" | 5 | 0-6-0 | JIM ELLIOT | STAINES S.M.E. |

| Loading (persons) | Running time (mins) | Distance run (feet) | Total work (ft.lb) | Average drawbar hp | Coal Used (lb) | Specific fuel consumption (lb/dbhphr) | Thermal efficiency (%) | Final Position |
|-------------------|---------------------|---------------------|--------------------|--------------------|----------------|---------------------------------------|------------------------|----------------|
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The competitors (continued)

Grand Parade is an A3 pacific, built using B.R drawings and information gained from Don Young's *Doncaster* series in L.L. & S. **Fred Johansen** brings his 5" gauge model from Merseyside and will represent **Wirral Model Engineering Society**. The locomotive was awarded a *bronze medal* in the 1991 M.E. exhibition and was *Very Highly Commended* at the Midlands exhibition in the same year. **Denis Postlethwaite** will drive the loco in this year's I.M.L.E.C. and hope to improve on Fred's *unplaced* result at Kinver in 1998.

Representing **West Cumbria Guild of Model Engineers**, **Ken Ellwood** makes the journey from Workington with his 3.5" gauge *Patriot* class 4-6-0. Ken has scaled up drawings from an Ian Allen book and made his boiler from information found in Martin Evan's *Model Locomotive boiler Construction*. The valve gear for this three cylinder model was checked using professor Bill Hall's computer programme.

Father and son team **Phil Preston** and **Phil Preston jnr**, built their 5" gauge L.N.E.R. *B1* between 1993 and 1995. Both are active members of the host society and the locomotive is built to Martin Evan's design but now uses hydrostatic lubrication. *Young Phil* is also an active volunteer at the Ribble Steam Railway, where he gets to *play* with full size engines. *Young Phil* will drive the *B1* and represent **Leyland Society of Model Engineers**.

Leonard Steel was the competition winner at Llanelli in 1997 when he drove his 5" gauge *Britannia 70007 Coeur-de-Lion* and gained an overall efficiency of 1.882%. Due to certain *grey areas* concerning locomotive eligibility, Len was asked not to re-enter the 1984 built loco until more specific eligibility criteria had been established. Although the locomotive was originally built by Lionel Flippance, Len has submitted a detailed account of subsequent work and modifications carried out by himself. The organisers of I.M.L.E.C. 2000 feel justified in accepting Len's application and representation of **Guildford Society of Model Engineers**.

Ex marine engineer **Frank Nixon** completed his *Sweet Pea* approximately seven years ago and now nominates **Paul Pavier** to drive the locomotive in this year's competition. Built to the popular *Jack Butler* design, Frank has used the 0-6-0 *Meter Maid* wheel arrangement and fitted a working *weir* pump on what he considers to be an easy to clean and practical club *runner*. Frank is registered as a **Private entry**.

Representing **Southport Society of Model Engineers**, **Paul Massam** makes the journey from Merseyside with his recently completed L.M.S *Black 5*. Due to maintenance on other locomotives, Paul's new 3.5" gauge 4-6-0 has taken seven years to complete and is built to the L.B.S.C *Doris* design. Paul and his locomotive enter the competition for the first time.

Continued...

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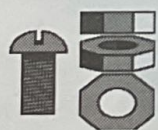
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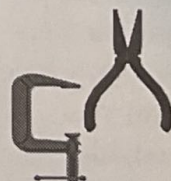
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The competitors (continued)

The **50D Association** takes its name from the locomotive shed once situated at Starbeck near Harrogate, North Yorkshire. **Chris Summersall** will represent the above with his L.N.E.R. 2-6-4 Tank. Built to a design by Clarksons, this 5" gauge model was abandoned in the early stages of construction before being salvaged by Chris and completed as a very smart looking *L1* class in early *British Railways* livery. The model is jointly owned by Mr D Pridmore and Chris Summersall.

John Hartup builds unusual locomotives to a very high standard, a previous example of John's work is currently held in the National Railway Museum. John enters our competition this year with his most recently completed exhibit, a *K class Beyer Peacock Garratt*. Over eight years in the making, this 3.5" gauge 0-4-0 - 0-4-0 weighs in at 270 lbs and has true compound cylinders, working vacuum brakes, steam operated cylinder drains and hydrostatic lubrication. John has used Gorton works drawings and fabricated everything other than the wheels, which were cast from his own patterns. John will represent **Lancaster & Morecambe Model Engineering Society Ltd.**

The rebuilding of Sir Nigel Gresley's first pacific *Great Northern* by the L.N.E.R's post war management was viewed by some as an act of vandalism. However, *L.B.S.C.* was inspired enough to base his 3.5" gauge *Heilan Lassie* design on this controversial machine and many successful models have been built as a result. **Eddie Gibbons's** example was completed in 1971 by his brother in law, the late Maurice Smith of Sunderland. As Eddie was building his own *A4* at that time, the two model engineers worked jointly on each other's locomotives and *Great Northern* was entered and competed successfully in the 1972 I.M.L.E.C. at Tyneside. In this year's competition Eddie will represent **City of Sunderland Model Engineering Society.**

Representing **Rolls Royce Glasgow, Wallace Aitken** will drive *Glasgow & South Western Railway No 9*. This is a 5" gauge, 0-6-0 tank locomotive finished in the attractive passenger livery of the above pre-grouping railway company. Although based on *Butch*, much information has been gained from photographs and measurements taken from the original engine now held in the Glasgow Transport Museum. Wallace has not run the loco for several years but recalls a previous I.M.L.E.C. attempt at Birmingham in which he was placed 4th.

Building and driving model locomotives is a tradition in the Winsall family and now young George Winsall is the proud owner of the 3.5" gauge *45xx* tank locomotive to represent **Rugby Society of Model Engineers Ltd.** Built by Fred Winsall around 1968 and serialized in *Model Engineer*, the model was one of the first examples built to Martin Evans's *Firefly* design. In this year's event, **Glyn Winsall** will drive the locomotive and, as always, offer strong competition to this year's remarkably varied and high quality selection of model steam locomotives from near and far.



*Ken Ellwood looking relaxed at the controls of a
3½" gauge LMS Patriot Class*



Nigel Potter driving a 3½" gauge LNER B2 at Carlisle in 1996



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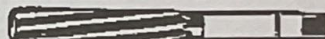
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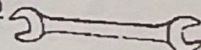
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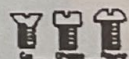
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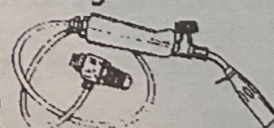
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Calculation of Results

(with acknowledgements to Bristol S.M.E.E.)

The dynamometer car measures and gives a direct reading of Total Work Done in foot pounds and Total Distance Travelled in feet. In addition, the Overall Run Time (min.) and Weight of Coal Used (lbs.) are recorded.

From these parameters the following calculations can be made:

$$\text{Average Drawbar Horse Power} = \frac{\text{Total Work Done (ft.lbs.)}}{\text{Overall Run Time (min.)} \times 33,000} \text{ hp} \dots\dots\dots(1)$$

$$\text{Coal Consumption Rate} = \frac{\text{Weight of Coal Used (lb.)} \times 60}{\text{Overall Run Time (min.)}} \text{ lb./hr} \dots\dots\dots(2)$$

$$\text{Specific Fuel Consumption (S.F.C.)} = \frac{\text{Coal Consumption Rate}}{\text{Average Drawbar Horse Power}} \dots\dots\dots(3)$$

$$\text{Substituting (1) and (2) in (3) S.F.C.} = \frac{\text{Weight of Coal Used (lb.)} \times 1,980,000}{\text{Total Work Done (ft.lb.)}} \text{ lb./d.b.h.p.hr} \dots\dots\dots(4)$$

$$\text{Now, Overall Thermal Efficiency} = \frac{\text{Work Output} \times 100\%}{\text{Heat Input}}$$

Assuming the calorific yield of the coal to be 14,186 B.Th.U/lb., 1lb. of coal will yield 14,186 x 778 ft.lb. of heat, where 778 is the number of ft.lb. per B.Th.U.

$$\text{From (4), Overall Thermal Efficiency} = \frac{1,980,000 \times 100}{\text{S.F.C.} \times 14,186 \times 778} \% \dots\dots\dots(5)$$

$$= \frac{19.9401}{\text{S.F.C.}} \% \dots\dots\dots(6)$$

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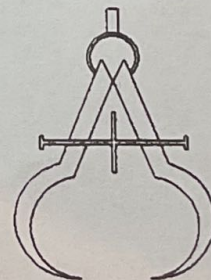
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| 70 | Whitney | Firefly | 5 | ? | L Labram |
| 71 | Southampton | Dean Single | 5 | ? | A Haydon |
| 72 | Tyneside | GWR 57XX | 5 | 1.066 | N Spink |
| 73 | Chingford | LNER L1 Tank | 5 | 1.6 | B Longstaff |
| 74 | Bristol | Nigel Gresley | 5 | 2.54 | F Winsall |
| 75 | Tyneside | GWR King | 3 ¹ / ₂ | 1.55 | L Joyce |
| 76 | Kinver | Speedy | 5 | 1.58 | B Perret |
| 77 | Chingford | Speedy | 5 | 2.32 | B Perret |
| 78 | Guildford | Maid of Kent | 5 | 1.61 | P Wood |
| 79 | Bristol | Stirling Single | 5 | 2.17 | D Morris |
| 80 | Bedford | BR Class 7 | 3 ¹ / ₂ | 1.37 | P Wood |
| 81 | Bournemouth | LNER J39 | 5 | 2.41 | P Wood |
| 82 | Leyland | GWR de Glehn | 5 | 1.5 | R Armsbury |
| 83 | Guildford | Royal Scot | 5 | 1.35 | L Pritchard |
| 84 | Bristol | Royal Scot | 5 | 3.66 | L Pritchard |
| 85 | Urmston | Nigel Gresley | 5 | 1.85 | A Crossfield |
| 86 | Bournemouth | Nigel Gresley | 5 | 1.64 | A Crossfield |
| 87 | Birmingham | LSWR Adams | 5 | 2.29 | K Moonie |
| 88 | Leeds | BR Prop 2-8-2 | 5 | 4.392 | L Flippance |
| 89 | Leyland | BR Prop 2-8-2 | 5 | 3.02 | L Flippance |
| 90 | Guildford | BR Prop 2-8-2 | 5 | 3.317 | L Flippance |
| 91 | Bristol | BR Prop 2-8-2 | 5 | 1.733 | K Ayling |
| 92 | Leeds | 7F S & D | 5 | 1.886 | D Sutcliffe |
| 93 | Leyland | LMS Stanier | 5 | 2.08 | J Heslop |
| 94 | Gravesend | LMS Stanier | 5 | 1.511 | J Heslop |
| 95 | Kinver | LNER Class P2 | 5 | 3.32 | J Heslop |
| 96 | Northampton | GWR Manor | 5 | 2.437 | A Crossfield |
| 97 | Lannelli | Britannia | 5 | 1.882 | L Steel |
| 98 | Kinver | BR Proposed | 5 | 2.274 | K Ayling |
| 99 | Northampton | Speedy | 5 | 1.789 | J Elliot |



Taken in July 1983 – Wallace Aitken's fine 0-6-0 G&SWR tank engine



Mike Collyer at the controls of his Gresley 2-8-0 with passenger Brian Collyer, a driver in this year's I.M.L.E.C.



F Johansen's 5" gauge A3 "GRAND PARADE"



3 1/2" gauge "BRITANNIA" entered by Paul Clarke



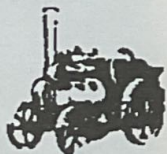
Dave James' 5" gauge Britannia No 70026 "POLAR STAR"

George Howard

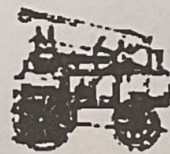
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DRAWINGS AND MOST CASTINGS FOR 5" GAUGE L.N.E.R. LOCOMOTIVES:

| | | | |
|----------------------|-------|------|------------------------|
| B2 | 4-6-0 | 2CYL | ROYAL SOVEREIGN |
| V2 | 2-6-2 | 3CYL | GREEN ARROW |
| A3 | 4-6-2 | 3CYL | FLYING SCOTSMAN |
| A4 | 4-6-2 | 3CYL | SIR NIGEL GRESLEY |
| A1 | 4-6-2 | 3CYL | SEA EAGLE (PEPPERCORN) |
| P2 | 2-8-2 | 3CYL | COCK O' THE NORTH |
| B17 | 4-6-0 | 3CYL | SANDRINGHAM |
| K5 | 2-6-0 | 2CYL | NORTHUMBRIAN |
| 7 $\frac{1}{4}$ G B1 | 4-6-0 | 2CYL | STEMBOK |
| 5" G L.M.S.R. | 4-6-2 | 4CYL | DUCHESS OF HAMILTON |

FREELANCE DESIGNS: 5" GAUGE

| | | | |
|-----|-------|------|---|
| B20 | 4-6-0 | 3CYL | SHERGAR. A MODERNISED ORIGINAL ROYAL SCOT |
| P4 | 2-8-2 | 2CYL | PHENOMENON. L.N.E.R. EQUIVALENT TO THE B.R. PROPOSED 2-8-2 |
| A12 | 4-6-2 | 2CYL | THE TALISMAN L.N.E.R. EQUIVALENT TO THE B.R. BRITANNIA |
| A3 | 4-6-2 | 3CYL | FLYING SCOTSMAN IN METRIC |

DRAWINGS IN PREPARATION:

| | | | |
|-------------------------------|-------|------|-----------------------------|
| 5" G A4 | 4-6-2 | 3CYL | SIR NIGEL GRESLEY IN METRIC |
| 7 $\frac{1}{4}$ G J42 | 0-6-0 | 2CYL | TANK PROMETHEUS |
| 7 $\frac{1}{4}$ G L.N.E.R. A3 | | 3CYL | FLYING SCOTSMAN |

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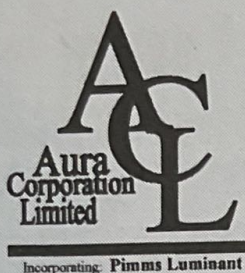
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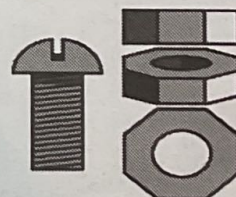
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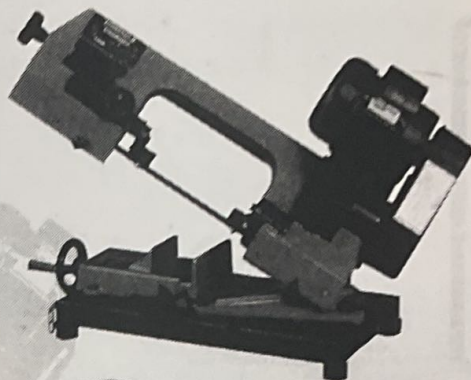
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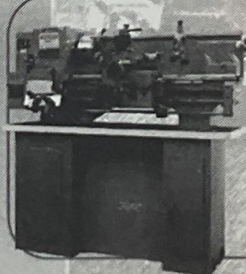


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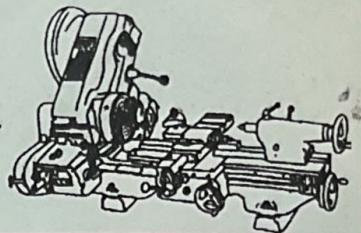
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| BOXFORD BUD 5" x 22" Mill, c/wheels, power cross feed, T-slotted cross slide | £1,400 |
| BOXFORD TR11-30 Toolroom Lathe, 5 1/2" x 30", geared head, gearbox, power feeds, 3/4 jaw chucks, Anjest screwcutting (metric), coolant and lighting | £3,750 |
| BOXFORD 330 13" swing x 40" centres, well equipped, very nice machine | Coming in |
| COLCHESTER BANTAM 1600 model, 5" x 20", geared head, power feeds, gearbox, COLCHESTER STUDENT 6" x 24", square head, gap bed, gearbox, power slides | £2,250 |
| Ainest screw cutting attachment | |
| COLCHESTER BANTAM 2000 geared head, gearbox, 3/4 jaw chucks, Dickson tool post, gap bed coolant | £3,450 |
| COLCHESTER MASTER 6" x 36", geared head, gearbox, gap bed, coolant, 3/4 jaw chucks | £1,750 |
| COLCHESTER STUDENT 6" x 24", geared head, gap bed, power cross feed, 4 way tool post | £1,150 |
| COLCHESTER STUDENT 6" x 24", geared head, gap bed, 3 jaw, vertical slide etc. | £725 |
| COWELLS 10-2000B precision screwcutting lathe, 3 jaw, vertical slide etc. | |
| EMCO V10P 5" x 24", geared head, gearbox, power cross feed, 3 jaw chuck, collets Dickson cabinet stand, green | £1,400 |
| EMI-MEC SPRING SERIES E 1" capacity single spindle, camless, auto, plug board + collets air hydraulic, air chuck and stepper motors, machine has been looked after | £950 |
| HARRISON L5, 4 1/2" x 24", fully toolled, complete with clutch | From new / choice £1,150 |
| HARRISON L5, 4 1/2" x 24", lathes, 240 volts | |
| HARRISON M250 5" x 30", geared head, gearbox 6mm lead screw | Original £3450 |
| 3/4 jaw chucks, coolant and splash back tray | From £950 |
| HARRISON L6, 6" x 24", geared head, gearbox, excellent toolroom machine, Choice 6 | |
| HARRISON 11" 5 1/2" x 24", geared head, semi screwcutting gearbox, gap bed, 3 jaw chuck, 4 way toolpost | £1,450 |
| HARRISON 140, 5 1/2" x 24", 3 jaw chuck, gap bed, power feeds, clutch | £1,400 |
| HARRISON 155 6 1/2" x 25" precision lathe, fully geared, well equipped | Choice, just in £450 |
| HOBBYMAT Lathe 2 1/2" x 12" complete | £1,150 |
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| MYFORD MIL 10 3 1/4" x 13", changewheels, 3 jaw chuck, 1/2 steady, stand | |
| MYFORD MIL 7 3 1/2" x 19", changewheels, 3 jaw chuck, we have a large selection of this popular model | From £750 |
| MYFORD MIL 7B 3 1/2" x 19", gearbox, 3 jaw chuck etc. | £1,250 |
| MYFORD MIL 7C 3 1/2" x 19", changewheels, 3 jaw chuck | £1,125 |
| MYFORD MIL 7D 3 1/2" x 19", gearbox, stand, coolant, tooling | £2,250 |
| MYFORD SUPER 7 3 1/2" x 19", changewheels, 3 jaw chuck | Choice £950 - £1,150 |
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| MYFORD SUPER 7G 3 1/2" x 31", gearbox, cabinet stand | Just £1,500 |
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| MYFORD 254S 5" x 20", geared head, gear box, power slides, 3/4 jaw chucks, friction dials, Dickson toolpost, cabinet stand, 240 volts, very nice/hardened bedways | £3,450 |
| SMART & BROWN 2nd operation lathe, 3 jaw chuck, x-y slides, tailstock, stand | Just £300 |
| VICEROY TDS 1 GBL 5" x 20", gearbox, power slides, 3 Morse tailstock | £1,250 |
| VICEROY TDS 2 GBL 5" x 36", gearbox, power slides, 3 Morse tailstock | £1,400 |

MILLING MACHINES

V - Vertical, H - Horizontal

| | |
|---|---------------------------|
| ADCOCK AND SHIPLEY 1ES, Horizontal proc. machine, table 30" x 8" (powered), coolant | Just £495 |
| ASTRA L4 horizontal/vertical mill, cabinet stand, 240 volts, as is, less arbor | £875 |
| BRIDGEPORT TURRET MILL, belt head RB, 42" x 9" variable speed table, D.R.O. one shot lube, clean machine | £1,950 |
| BRIDGEPORT turret milling machine belt head, speed to 4600 rpm, 48" x 9" variable table drive, anilam micro wizard dro, intertube | Very very clean £3,000 |
| BRIDGEPORT SERIES 1 2hp 42" x 9" table/variable speed, Heidenhain dro, late machine | £3,200 |
| CENTEC 2B Horizontal, 1" arbor, table powered, 3 ph motor, single phase main motor | £725 |
| CENTEC 2B HV, vertical head, 2 morse taper/swivel, cabinet stand | £1,400 |
| CENTEC 2C milling machine, vertical 30" int head/quill feed + horizontal overarm | £1,725 |
| ELGAR EMTCC HV H-30INT V-2 morse taper, table 24" x 6" powered, coolant, pedestal stand | Just £1,250 |
| ELLIOT U1 Horizontal milling machine | As is for £375 |
| EMCO MENTOR V, 2 morse taper/swivel head, table 20 1/2" x 6" pedestal stand | Now just £725 |
| EMCO (Made in Austria) F32 vertical 6 speed 2 morse quill feed head complete | £2,250 |
| with power feed to table | |
| GATE MODEL 1 (HV) 45" x 10" table powered, 40 int head | Late machine £1,975 |
| GEORGE ALEXANDER mill | As is, just £1,500 |
| HARRISON horizontal, 31" x 8" powered table | Very clean £650 |
| HOBBYMAT BFE 645(V) 2 morse bench machine, table 17" x 6", speeds 310-1600 rpm | £850 |
| MARLOW No. 5 turret type milling machine, 3 morse quill feed head | £975 |
| RAGLAN VERTICAL MILL 2 Morse taper, 2 speed motor, variable selector 175-2220 RPH, cabinet stand | £1,150 |
| RISHTON VM60 bench machine, table 24" x 6", geared 6 speed head Clarkson chuck & vice | £1,950 |
| RODNEY PLUS precision milling machine, 2 morse Myford thread/Myford collets, 15" x 4 1/2" table, pedestal stand | £875 |
| TOM SENIOR M1 horizontal, 25" x 6" powered table, 1" arbor | £575 |
| TOM SENIOR M2 25" x 6" 2 morse taper, 1" arbor | Selection £1,200 - £1,450 |
| TOM SENIOR TYPE S vertical turret type, mill, coolant, extremely nice | £1,950 |
| TOS FO3 AV vertical turret mill, 40 INT, 54" x 10" table, power all-ways | £1,950 |

DRILLS

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| FOBCO 1/2" Bench, Tilting Table | £325 |
| FOBCO 1/2" Pedestal Drill Tilting table | £345 |
| FOBCO 7/8" 1/2" pedestal drill | £575 |
| MEDDINGS 1/2" pedestal drill | £245 |
| MEDDINGS 2 Morse taper pedestal drills | Choice £275 |
| POLLARD CORONA pedestal 1 1/2" morse | From £100 |
| STARTRITE MERCURY 1/2" 4 speed bench drill | £225 |
| STARTRITE Mercury 1/2" pedestal drill, low volt light, 240 volts | £300 |

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| CLARKSON MKI Tool and Cutter Grinder | Choice £550 - £850 |
| CLARKSON MKII 6" x 12" tool and cutter grinder, graduated dials, universal head, centre, cabinet stand | £1,750 |
| EAGLE MODEL 4W MKII 24" x 6" table with 14" x 6" magnetic chuck + dust extractor | £1,150 |
| MILFORD 12" Pedestal Grinder | £325 |
| PINNACLE MODEL 450A Tool and Cutter Grinder (current model) capacity, 8 1/2" x 16" 1986 | £1,275 |
| R.J.H. Buffing Machine, pedestal model | £325 |
| VICEROY Grinder, pedestal model | £145 |
| VICEROY Buffers, pedestal models | Each £250 |

MISCELLANEOUS / FABRICATION MCH.

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| MYFORD VMD mill/drill attachment for ML7/Super 7 | New, never used £625 |
| GAM TURRET drilling head (changes one head into six heads) | New £175 |
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| F.J. EDWARDS 24" hole cutter | £525 |
| MACC TE 255 cut off saw and stand, 240 volts | £350 |
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| STARTRITE 14-5-5 bandsaw, 5 speed pedestal model | £775 |
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| LINK 1.5 tonne vehicle crane + top hat | £625 |
| MITUTOYO 103-913 metric set micrometers | £275 |
| COLCHESTER CHIPMASTER/BANTAM turret capstan attachment | £475 |
| RHJ buffing machine complete with built-in extractor | As new, never used £750 |
| GABRO 2ft folder, bench model | £325 |
| COLCHESTER BANTAM travelling steady | £40 |
| OPTIC DRO (to fit Myford ML7/Super) | New from stock £340 |
| OLDAK 1/2" high speed drill | £85 |
| KEETONA K2 hand shear (on stand) | £45 |
| RAPIDOR 6" hacksaw machine | £175 |
| RAPIDOR major hacksaw | £325 |
| HITACHI cut off saw model HU12 | £140 |
| F.J. EDWARDS MODEL 1 1/2 Besco bar cropper (hydraulic) 1 1/2" round capacity | £425 |
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| TOM SENIOR LBA enamelling oven | £140 |
| TOM SENIOR Junior slotting head | £225 |
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| STEEL STOCK Just arrived - to call only | |
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| | |
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| VICEROY 12" Disc Sander & Extractor | £375 |
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