

**The Gravesend Model Marine
and Engineering Society**

presents

**IMLEC
1994**

**The 26th International Model Locomotive
Efficiency Competition**

for the Martin Evans Trophy
at The Cascades Leisure Centre
Thong Lane, Gravesend, Kent

9 & 10 July

ADMISSION BY PROGRAMME

Production of this programme entitles entry to The Cascades Leisure Centre and use of its facilities at member rate. This offer is valid for the duration of the Competition only and is subject to the terms and conditions of The Cascades Leisure Centre



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The twenty sixth Annual Model Locomotive Efficiency Competition for the Martin Evans Challenge Trophy

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IMLEC Officials

Chairman	Frank Staniforth
Committee	F Staniforth, R Heathcote, J Hughes, S Poulten, I Lavender, P Fitzgerald,
Chief Judge	Ken Linkins (Maidstone MES)
Treasurer	Steve Poulten
Programme Secretary	John Hughes
Results Compilers	Frank Oakes, Colin Hazelhurst,
Observers	Ben Healey, Geoff Wigzell, Paul Sutton, Phil Taylor, John Hale
Exhibition Organisers	Larry Townsend, Colin Thorndycraft
Chief Stationmaster	Sid Nicholls
Chief Marshal	Peter Fitzgerald
P/A Announcers	Bob Featherstone, Jim Burnige
Reception and Information	Marion Healey

Presentation of Prizes

The Prize giving will be at approximately 6pm on Sunday 10th. July.

Prizes are awarded as follows:

Overall Winner	Challenge Trophy, Certificate, and cheque for £100
Runner-up	Certificate and cheque for £50
Third Place	Certificate and cheque for £25
Fourth Place	Certificate and cheque for £15

There will be a special prize for the best 3¹/₂" gauge locomotive if not in the overall first four.

All other starters Certificate

Prizes will be presented by the Worshipful the Mayor of Gravesham,
Councillor Wally Cook.

What is IMLEC?

What is I.M.L.E.C.? To those of you who regularly attend I.M.L.E.C., there will be no need to explain what the event is about, but for the first time visitor and the less initiated here is a brief summary of the proceedings.

The purpose of the Competition is to find the locomotive which returns the highest thermal efficiency (expressed as a percentage of the energy in the coal burnt, during a load-carrying run under stipulated conditions, which is converted into useful work measured at the drawbar).

Each locomotive will be required to run for a minimum of 25 minutes and the driver has the choice as to the number of passengers he will carry as his load. Any amount of coal (which is measured) and water can be used.

There is a dynamometer truck (which measures the work done during the run) coupled to the locomotive at the head of the passenger trollies.

The driver will of course have decided how the task ahead will be tackled. Where and when to fire, when to replenish the boiler and a lot of other factors will have to be taken into account. Track gradients, drag on bends and how the locomotive will be driven are just a few of these considerations, and upon all of these factors and many other decisions during the course of the run will ultimately depend whether the outcome for the driver be favourable or end in disappointment.

To run any model locomotive, especially in the smaller gauges, continuously, for half an hour must be considered a good achievement. To return a thermal efficiency of above 3% is outstanding. At the end of the day, to return the highest overall efficiency will be the cream on the cake.

That is I.M.L.E.C.

Tickets will be on sale by GMMES members during the weekend for a

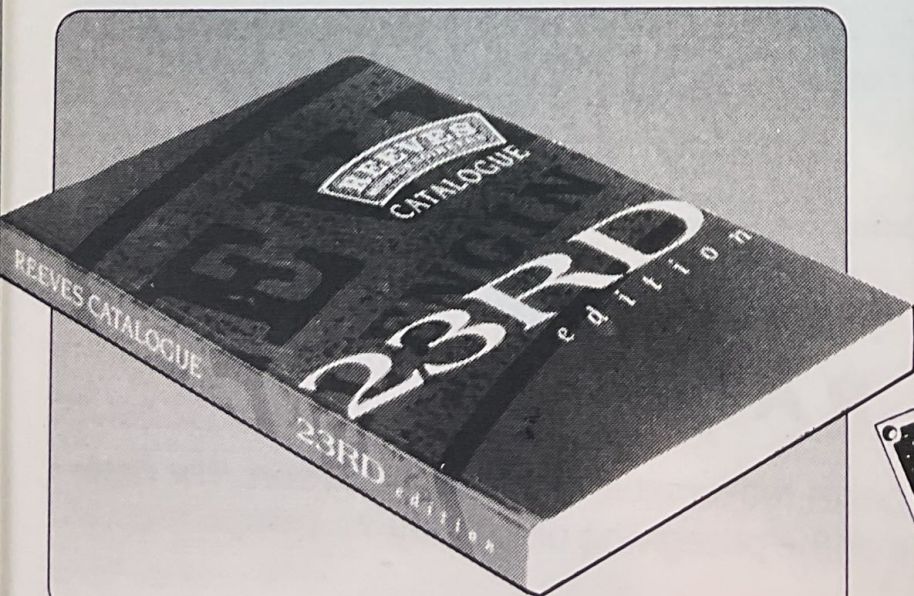
R A F F L E

with substantial voucher prizes redeemable at Messrs A J Reeves. The draw will be at the prizegiving on Sunday.

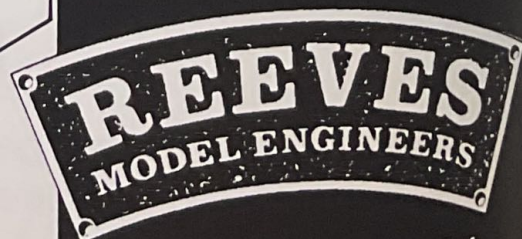
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GMMES A Message from the Chairman

May I on behalf of The Gravesend Model Marine and Engineering Society welcome you to the 26th I.M.L.E.C., to be held here at the Cascades Leisure Centre.

The Gravesend Society had its beginnings in 1953 being then wholly marine orientated and the club at that time was called the Thames Group Marine Model Society.

Pursuing a permanent site and premises the Society continued to meet in rooms around the town. During this time an engine and portable track were constructed, run at fêtes and other local events in the Gravesend area. This helped in promoting the Society and raised much needed funds.

In 1977 after much searching the Society was to find its home on the site it occupies today. With the money raised from the portable track runs and a loan from the Gravesham Council, members' thoughts turned to planning the first track. While the Royal Engineers from Brompton Barracks at Gillingham prepared the trackbed, members were busy constructing the track sections and supports, most of this work taking place in one of the member's garden. When finished these sections of 20ft length were carried over to the site for erection. Eventually in April 1979 the first oval track of 600ft was officially opened by the Mayor of Gravesend. By two further extensions this simple oval was increased in length to 1218ft. The first extension was to increase the length of the original oval by 60ft per side which incorporated the deep cutting at the far end from the club hut. The second was to build the inner section of sharper curves giving the layout you see today.

The site on which the Leisure Centre has been built, along with the Riverview housing estate opposite, was once part of the Gravesend Aerodrome used by the R.A.F. during the second world war. From here looking northerly over the lower reaches of the Thames will be seen glittering in the sunshine the gas storage tanks on Canvey Island in the County of Essex. Following the river up towards London you would pass

Tilbury Docks opposite Gravesend, the Queen Elizabeth II Bridge at the Dartford Crossing, the Thames Barrier and Tower Bridge as you enter the City of London.

The Society's activities on this site today owe as much to the efforts of the local Council as it does to those of its members. Over the years we have enjoyed good relations with Gravesham Leisure Services and hope that this will continue. I would like to take this opportunity to thank them for their help and permission in allowing the Society to hold the I.M.L.E.C. event over this weekend.

It remains for me to wish all of the competitors and visitors a pleasant and enjoyable weekend and with a little luck the weather will be kind to us and make this 26th I.M.L.E.C. all the more memorable.

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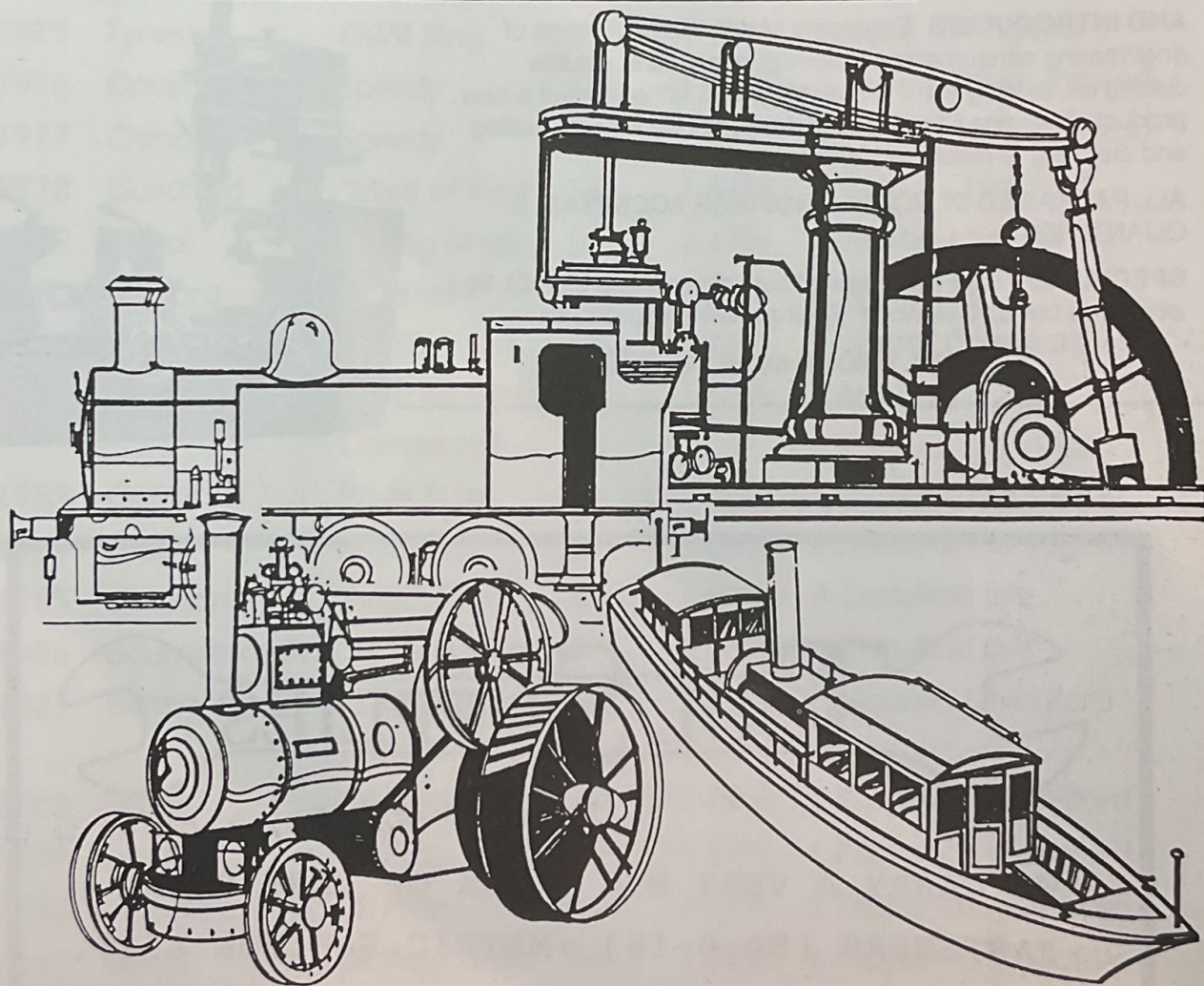
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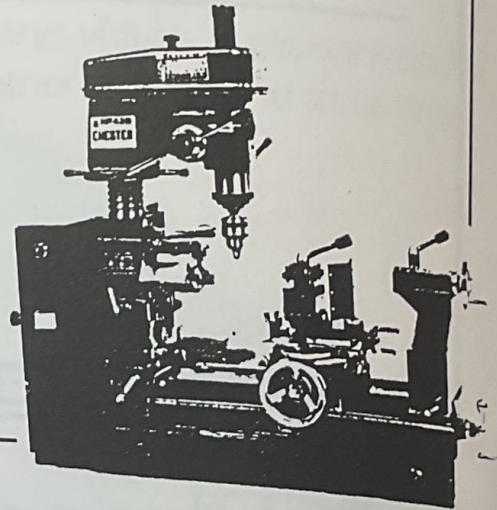
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1969 Previous IMLEC winners 1993

Year	Host Club	Engine	Gauge	Effy.	Driver/Society
1969	Birmingham	Royal Scot	5in	?	J Drury, Birmingham
1970	Whitney	Firefly	5in	?	L Labram, Birmingham
1971	Southampton	Dean Single	5in	?	A Haydon, Newton Abbott
1972	Tyneside	GWR 57XX	5in	1.066%	N Spink, Chesterfield
1973	Chingford	LNER L1 Tank	5in	1.60%	B Longstaff, S Durham
1974	Bristol	"Nigel Gresley"	5in	2.54%	F Winsall, Rugby
1975	Tyneside	GWR King	3 ¹ / ₂ in	1.55%	L Joyce, Chingford
1976	Kinver	Speedy	5in	1.58%	B Perrett, Southampton
1977	Chingford	Speedy	5in	2.32%	B Perrett, Southampton
1978	Guildford	"Maid of Kent"	5in	1.61%	P Wood, Chingford
1979	Bristol	Stirling Single	5in	2.17%	D Morris, Urmston
1980	Bedford	BR Class 7	3.5in	1.37%	P Wood p/e
1981	Bournemouth	LNER J39	5in	2.41%	P Wood, Chingford
1982	Leyland	GWR de Glen Compound	5in	1.50%	R Amsbury, Derby
1983	Guildford	Royal Scot	5in	1.35%	L Prichard, Harlington
1984	Bristol	Royal Scot	5in	3.66%	L Prichard, Harlington
1985	Urmston	"Nigel Gresley"	5in	1.85%	A Crossfield p/e
1986	Bournemouth	"Nigel Gresley"	5in	1.64%	A Crossfield p/e
1987	Birmingham	LSWR Adams Tank	5in	2.29%	K Moonie, Chingford
1988	Leeds	BR Prop. 2-8-2	5in	2.29%	L Flippance, Guildford
1989	Leyland	BR Prop. 2-8-2	5in	4.39%	L Flippance, Guildford
1990	Guildford	BR Prop. 2-8-2	5in	3.02%	L Flippance, Guildford
1991	Bristol	BR Prop. 2-8-2	5in	3.32%	L Flippance, Guildford
1992	Leeds	Somerset and Dorset 7F2-8-0	5in	1.89%	D Sutcliffe, Ribble Valley
1993	Leyland	LMS Stainer Tank	5in	2.08%	J Heslop, Rydale

Notes for Competitors

A On arrival Competitors should enter by the lower gate (see plan) and report to the Marshal on duty. They will be directed to off-load their engines onto a siding serving the steaming bays. Cars must not be left in this area any longer than necessary and should be removed to reserved spaces in the main car park. Competitors should then report and register at the Reception caravan at the track entrance.

B One hour before the start of his run a Competitor will be called to prepare his loco. and will be allocated an Observer. Failure to be available within a reasonable time of being called may forfeit the right to run.

C Drivers will be given passenger tickets to distribute as they wish. Otherwise passengers will be chosen by the Station Master if given at least 30 mins notice. Driver-allocated passengers must be at the Station at least 5 mins before the start.

D Trolleys will take three passengers each. There are ten trolleys available.

E Water will be available "on the run" as requested on passing the Station. The quantity consumed is not recorded.

F A count-down clock will be situated at the Station indicating elapsed time and highlighting the period after 25 minutes.

G At the end of the timed run engines should be parked on the siding under the guidance of the Marshal, pending removal from site.

H The Observer will assist the driver when necessary to carry out the run correctly but will not give any advice of a competitive nature.

I Results will be displayed shortly after the end of each run, giving individual performance and running placings.

J All competitors who begin their timed run will receive a Certificate recognising their participation, signed by Mr Martin Evans. Non prizewinners collect from Reception. (It may be necessary to send these later.)

K Both 5" and 3¹/₂" locos may run either day.

L VALID BOILER CERTIFICATES (not copies) must be available for inspection before steam is raised.

M Competitors and drivers must behave in a safe manner at all times when in charge of locomotives and failure to do so may result in disqualification.

N Instructions given in these notes have the force of Rules.

Rules for Competitors

- 1 The results of the Competition will be calculated in accordance with the formula quoted herein. Any dispute shall be referred to the Chief Judge whose decision is final and binding on all parties.
- 2 Data will be obtained from a dynamometer car between the engine and first passenger trolley.
- 3 As much charcoal, wood and paraffin as needed may be used prior to the run to raise steam. The change to weighed coal is at the Competitor's discretion, but a good coal fire must be established before venturing onto the track.
- 4 Competitors may choose the quantity of coal (anthracite) they require for their run from two available sizes in pre-weighed bags. This will be checked and weighed in their presence and the weight entered on the run sheet. Extra weighed coal may be taken on during the run. No fuel other than that officially supplied may be used.
- 5 Competitors will carry an Official Observer who will monitor the run and note any data required for the calculation of efficiency. All data may be scrutinised by the driver.
- 6 From one hour prior to the run to the time the engine is clear of the tracks, the Competitor will be under the jurisdiction of the Observer and the Track Marshals, and will conform to their wishes at all times.
- 7 Prior to, and in good time for, their run Competitors must decide the number of passengers they wish to carry at the start and trollies will be made up accordingly. Passengers only may be dropped during the run at the driver's discretion, supervised by the Observer, but no passengers may be taken on at any time after the start.
- 8 Steam will be raised in the Steaming Bay and the loco. transferred to the track under the supervision of the Marshall and Observer. The engine will then be propelled, accompanied by the Observer, on the track in reverse by the driver by any means, to the Station where it will be connected to the dynamometer car and the prescribed trollies and passengers. The initial run data will be noted by the Observer in the presence of the driver. The driver will then be asked to confirm that he is satisfied with the set-up of the train and that he is ready to start. The instruction to start will then be given by the Timekeeper and the run will be deemed to start at that time.
- 9 The track speed limit of 8 mph must be observed, and drivers will be advised if this is approached. Two warnings of excessive speed will be given. A subsequent infringement will result in disqualification.

10 To qualify, a whole number of laps must be completed without outside assistance to the engine. Pressure may be regained, using only fuel supplied, within the limitations of Rule 12.

11 The nominal duration of the run is 30 mins. and you must run for 25 mins. (inclusive of stops under rule 12). You may stop after 25 mins., but you must not run longer than the lap in which the 30 mins has been reached. The Observer must be told of your intentions.

12 A Competitor may come to a temporary halt during the run but the time at rest on each occasion must not exceed 8 mins as estimated by the Observer, or he will be disqualified. Competitors will be penalised under this rule for stoppage due to engine derailment but not for trolley derailment.

13 Only working sanding equipment (if fitted to the engine) may be used to assist traction.

14 No external assistance may be given to the engine or abnormal weight applied, externally or otherwise, to increase its adhesion or apparent tractive effort..

15 The adding of ballast, including water, external to the scale outline is not allowed.

16 Use of the hand water pump is forbidden except as an emergency, in which case the Competitor must retire.

17 The coal used will be taken as the amount supplied less that left with the engine (except in the firebox), which will be collected and weighed after the run in the presence of the driver. Fuel in the firebox is ignored.

18 All coupling and un-coupling must be carried out by GMMES officials.



NOW THERE'S

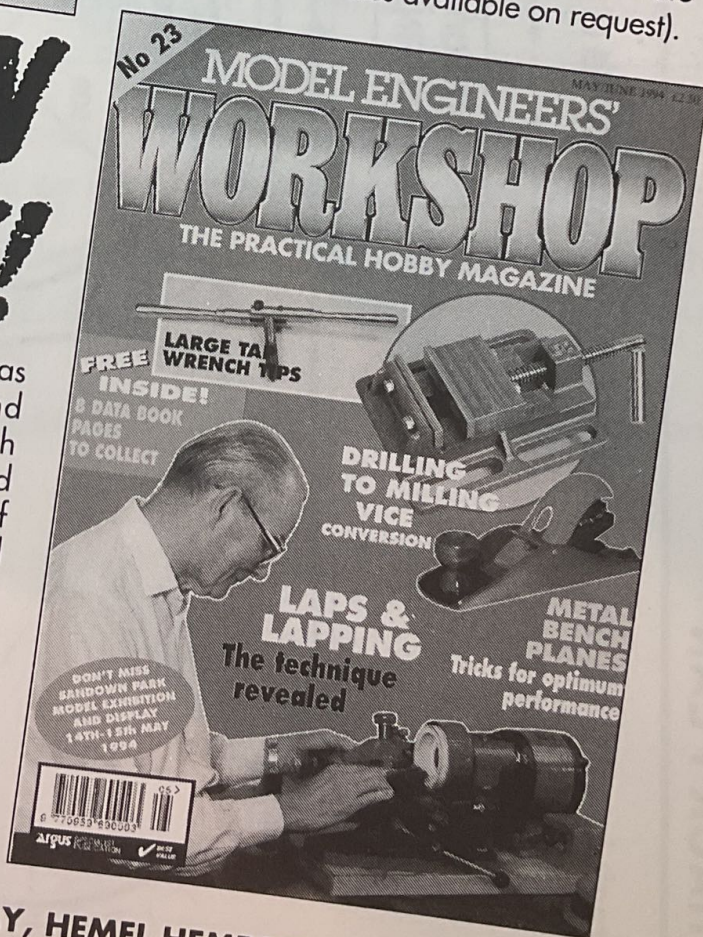
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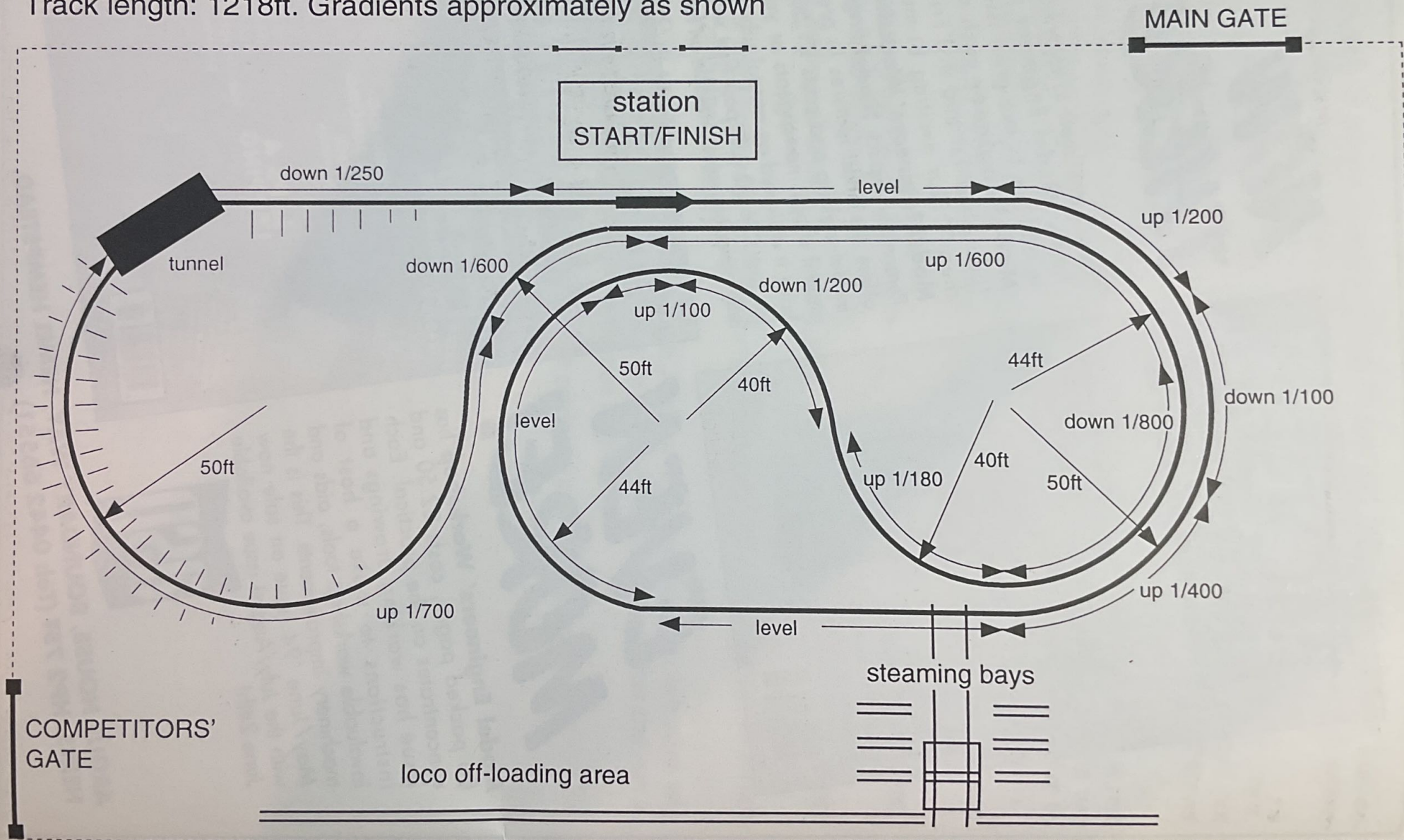


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TRACK PLAN

Track length: 1218ft. Gradients approximately as shown



Calculation of Results

Calculations made for each run and shown on the results sheet are:

- 1 Ave. Draw Bar Horse Power (HP) =
$$\frac{\text{Total Work Done (ft lb)}}{\text{Overall Running Time (mins)} \times 33000}$$
- 2 Coal Consumption Rate (C.C.R.) lb/hr.=
$$\frac{\text{lb Coal used} \times 60}{\text{Overall Running Time}}$$
- 3 Specific Coal Consumption (S.C.C.) lb/HP/hr =
$$\frac{\text{lb Coal used}}{\text{Running Time} \times \text{HP}}$$
- 4 Overall Thermal Efficiency (O.T.E.) =
$$\frac{\text{Work Done}}{\text{Heat in Coal used}}$$

$$\text{Hence O.T.E (\%)} = \frac{\text{Work Done (ft lb)} \times 100}{\text{Coal used (lb)} \times \text{Calorific Value (Btu./lb)} \times 778.2 \text{ (ft lb/Btu.)}}$$

The Work Done by the loco. in ft.lb. and the Run Time in minutes are obtained by the Observer from the Dynamometer car instruments at the end of the run.

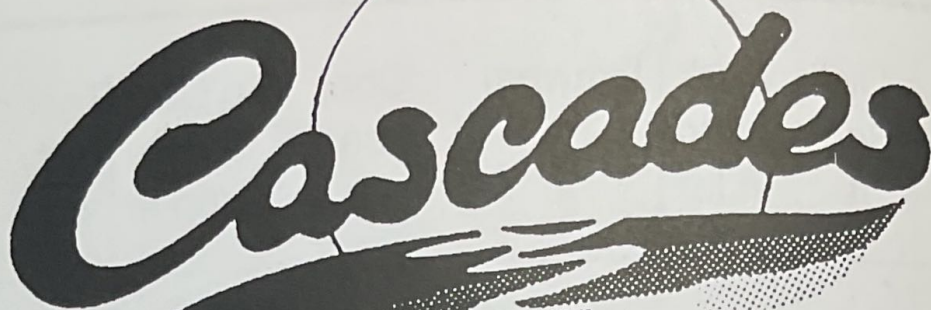
The coal supplied and returned is weighed to the required accuracy by the Organisers for each competitor. Coal calorific value is predetermined for the bulk quantity supplied for the Competition.

Locomotive axle weights, where determined, are not part of the calculations and are quoted separately.

Results Saturday July 9

Run	Time	Owner/Driver	Gauge	Locomotive	Society	Load Passengers	Run Time min	Dist Run ft	Work Done ft lb	Drawbar HP	Coal Used lb	Sp Coal Cons. lb/hp hr	Therm Effy. %	Final Position
1	9.00	Don Cordall	5"	Railmotor	P/E									
2	9.45	Brian Baker	3 1/2"	Jubilee	P/E									
3	10.30	Dave Holland	5"	Sweet Pea	Peterborough									
4	11.15	Ron Heathcote	5"	GER 4-6-0	P/E									
5	12.00	Dennis Pearson	5"	Torquay Manor	Llanelli									
6	12.45	J S Coleman	5"	GWR 2-8-0	Bristol entry									
7	13.30	Geoff Austin	5"	GWR 57xx	Littlebrook									
8	14.15	Gerry Mole	5"	Rebuilt Scot	Warrington									
9	15.00	D Watkins	5"	Speedy	Malden entry									
10	15.45	Geo. Golightly	5"	Simplex	Llanelli									
11	16.30	R Blackwell	5"	GWR 45xx	Romney Marsh									
12	17.15	H J Fisher	5"	No details										
13	18.00													
14	18.45													
15	19.30													

Cascades

A stylized graphic featuring a large, thin-lined circle representing a sun or moon, positioned above a series of horizontal, wavy lines that suggest water or a landscape. The lines are filled with a halftone dot pattern, creating a textured effect.

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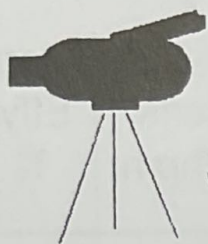
SEE YOU AT THE SHOW

Results Sunday July 10

Run	Time	Owner/Driver	Gauge	Locomotive	Society
1	9.00	Glyn Winsall	3 1/2"	Amer. 4-4-0	Northampton
2	9.45	Paul Pavier	3 1/2"	LNER V4	Wigan
3	10.30	John Chapman	5"	GER C1 D56	Welling
4	11.15	Bill Tabiner	5"	Rebuilt Scot	Wigan entry
5	12.00	Martin Parham	5"	LMS Duchess	Maidstone entry
5	12.45	V G Newport	5"	Frilsham Manor	Bracknell
7	13.30	Brian Cantwell	5"	Rebuilt Scot	Urmston entry
8	14.15	Alan Philpot	5"	F/L Atlantic	Welling
9	15.00	John Heslop	5"	LMS 2-6-4	Rydale
10	15.45				
11	16.30				
12	17.15				

Load Passengers	Run Time min	Dist Run ft	Work Done ft lb	Drawbar HP	Coal Used lb	Sp Coal Cons. lb/hp hr	Therm Effy. %	Final Position

How
about a
record of
this
weekend



for the
long
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evenings
?



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Acknowledgements

We acknowledge the help and support from:

Councillor Wally Cook for presenting the prizes.

The Management of Gravesham Leisure and of the
Cascades Leisure Centre for their interest and guidance.

Mr Martin Evans for thinking the whole thing up.

The Editorial staff of the Model Engineer.

Ken Linkins for his onerous rôle as judge.

The St John's Ambulance Brigade for their reassuring presence.

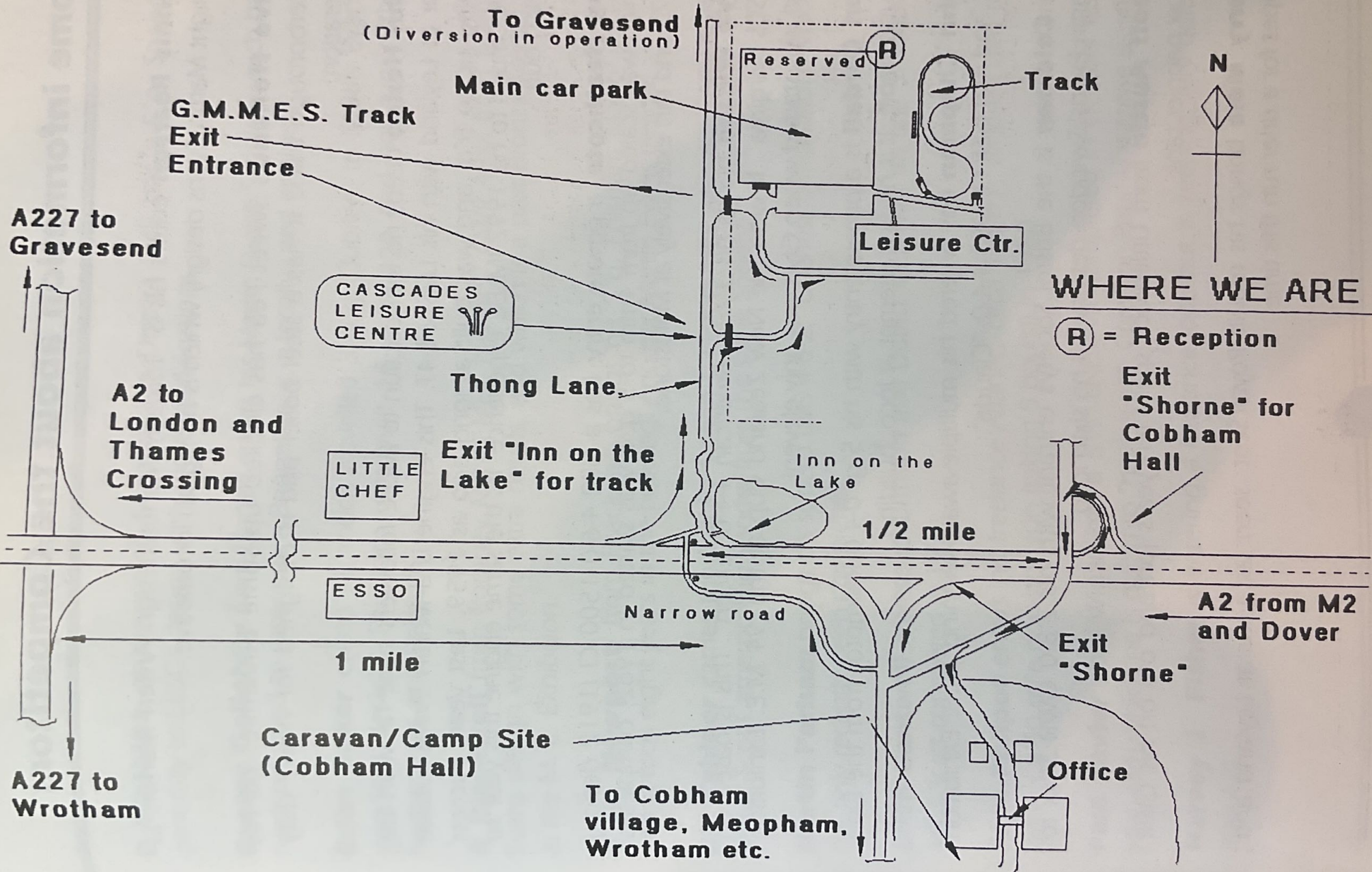
The Bristol and Birmingham MESs for the use of their dynamometer cars.

The Leyland and Leeds MESs for moral support and practical help.

The wives of GMMES members for their help and forbearance.

Jenny Searle for the programme design.

...and most important of all – the competitors, without whom nothing
would have happened.



Some information about the Competitors

Dennis Pearson enters his 5" Torquay Manor design Arden Manor, (a straight Martin Evans design) which is his eighth locomotive.

Dave Holland's Sweet Pea has clocked up some 500 miles on his Peterborough track. It has a steel boiler and is designed for heavy duty operation.

John Heslop needs no introduction to IMLEC followers since he won last year at Leyland with his LMS 2-6-4T. This engine is a Martin Evans Jubilee scaled up to 5" g. and was built as long ago as 1959. Last year's success owes much to his 1992 IMLEC experience. It's the same engine this year so watch out!

Ron Heathcote, a private entry, has a GER 4-6-0 1500 CI (1912 design) which was scaled up from 4mm to 5" g. It was started in 1962, completed 1973 and ran extensively at Maidstone.

Glyn Winsall brings his 3 1/2" g. American 4-4-0 "Eileen". This is based on LBSC's "Virginia". It won the New Zealand Cup at the '94 M.E. Exhibition and was started when Glyn was only eleven!

Don Cordall is a private entry with his 5" g. 0-4-0 Railmotor from the Don Young stable. It is his first attempt at loco. building.

John Chapman has entered his multiple-award-winning (M.E. Exhibition '91 and '92) GER CI. D56 4-4-0- "Claude".

JS Coleman is the Bristol Society's entrant with his 2-8-0 GWR 38xx to Martin Evans' Swindon design. It is his sixth loco.

Geoff Austin from Littlebrook spent ten years (on and off) on his GWR 57xx pannier tank.

Gerry Mole brings his rebuilt Royal Scot seen last year at Leyland and hopes for a drier run this time!

D Watkins, representing Malden and District SME has a 5" g. Speedy generally to LBSC's design with some modifications.

George Golightly from Llanelli enters his Martin Evans' Simplex which has been modified to resemble a Bagnall tank, a locally used engine.

Brian Baker enters his much travelled 3½" g. "Jubilee" to Martin Evans' standard design. This loco was built 14 years ago and has run in the Netherlands and Belgium.

R Blackwell from Romney Marsh MEC has a 5" GWR 45xx from Martin Evans design with some extra details, and which is a past Bronze Medallist at the M. E. Exhibition.

V G Newport, from Bracknell, brings his 5" g. Frilsham Manor 7816 which took eight years in the building. Another Martin Evans design.

Bill Tabiner carries the flag for Wigan & District MES with Alan Atherton's rebuilt Scot Cameron Highlander from the same Society.

Martin Parham brings his superb LMS 4-6-2, "Duchess of Hamilton" which has only recently been completed.

Brian Cantwell represents Urmston and District MES with his fine 5" rebuilt Royal Scott completed in 1991.

Alan Philpot enters his freelance Atlantic, circa 1954/7, whose claim to fame is a 50 mile non-stop run (taking 8 hours!) in 1980.

Paul Pavier from Wigan has a 3½" LNER V4 completed in October last year with which he is going to "have a go". Come on Paul — surprise us all!

Harvey J Fisher is entering a freelance loco but is keeping very quiet about it!

An IMLEC Experience

By John Heslop. Winner 1993

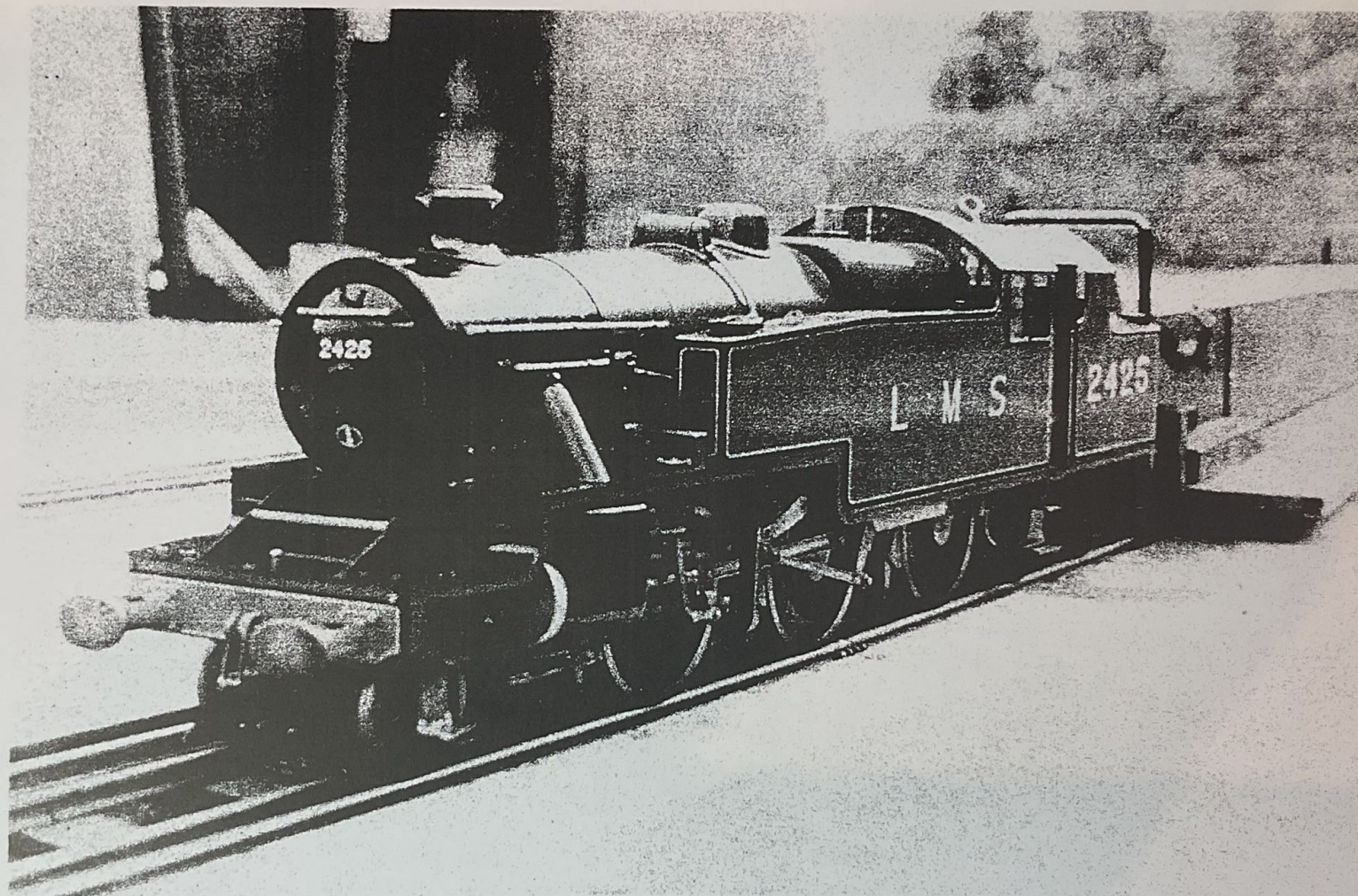
My LMS 2-6-4 tank was built during 1958/9 some nine years before I.M.L.E.C. was initiated and had a heavy overhaul in 1988, including re-boiling.

Its performance in the 1992 event showed some promise so a second run at Leyland was decided upon, after some further modifications. Off came the old gunmetal cylinders to be replaced by cast iron ones, axle pumps were sleeved down to reduce excess capacity, an economiser was fitted in the smoke box to heat the feed water and a close fitting ashpan installed with damper doors to control the steaming. A half-hour run at Gilling with a load of about a ton proved satisfactory, with about two lbs. of coal burned.

The track at Leyland was clean but highly polished and I elected to take a load of fifteen in total. Steam raising went O.K., if a few minutes premature and the run from the steaming bays to the station got the fire settled down. Passengers were quickly aboard and with a momentary slip we were off, gradually working up to full regulator and cut-off 20-30%. Most of the firing was in the first fifteen minutes, the dampers were closed at the first hint of blow off and driving was done on the reverser with the right hand poised to check any slipping. At twenty five minutes I reckoned (with fingers crossed) we were good for another lap, and so it proved. The run put me in first place, but there were still six competitors to go and I was on tenterhooks right up to the point when it was announced that Keith Pardey, after his re-run, had come third. Then a great feeling of satisfaction, elation even.

We all hope to win, but win or not there is always the pleasure of taking part in what has become, competition apart, a great social event in the model engineering calendar.

**The GMMES hope you have enjoyed your visit to Gravesend
and we hope to see you at next year's Competition.**

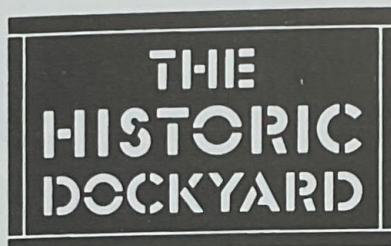


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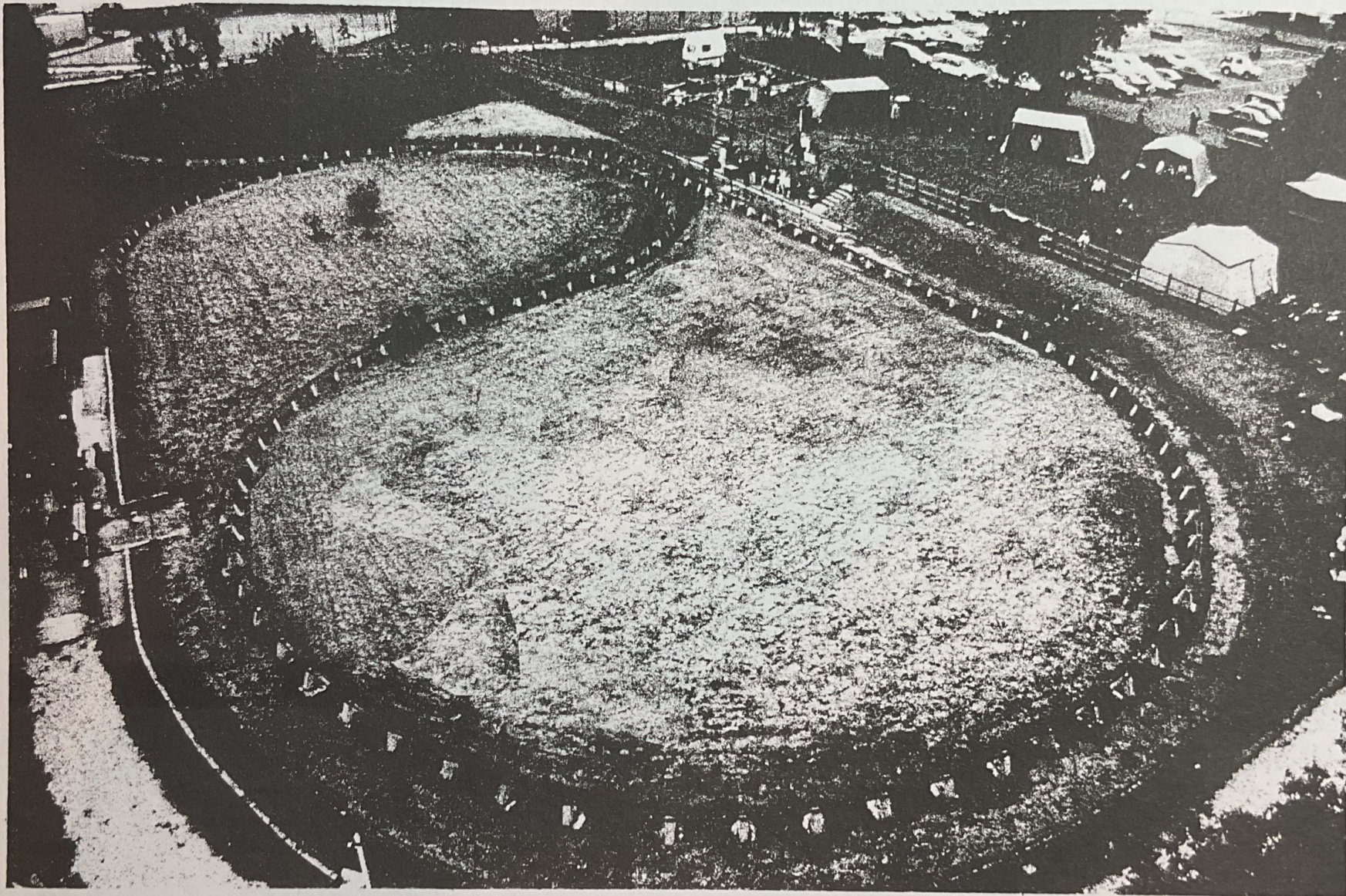
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THONG LANE TRACK SITE FROM THE AIR. PHOTO: MIKE SPURGIN

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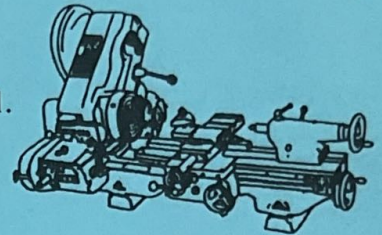
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