

THE
LMS SOCIETY
TEACH-IN

EDITORS NOTE.

These notes were prepared by members of the LMS Society for presentation, in the first instance, at the Teach In organised by the Society at Dillington House, Ilminster, from the 26th to 28th March, 1976. Because of the large amount and usefulness of the information they contained, it was considered it best to combine them all as a book to be made available to fellow enthusiasts as an introduction to the LMS and to provide a background of facts about the railway as a basis for further study.

It has been my pleasure to produce these notes in the present form and I would like to thank my fellow members for the effort they have put into the work, each section being prepared by an acknowledged expert in his particular field.

M.Peascod

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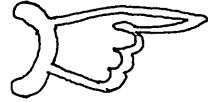
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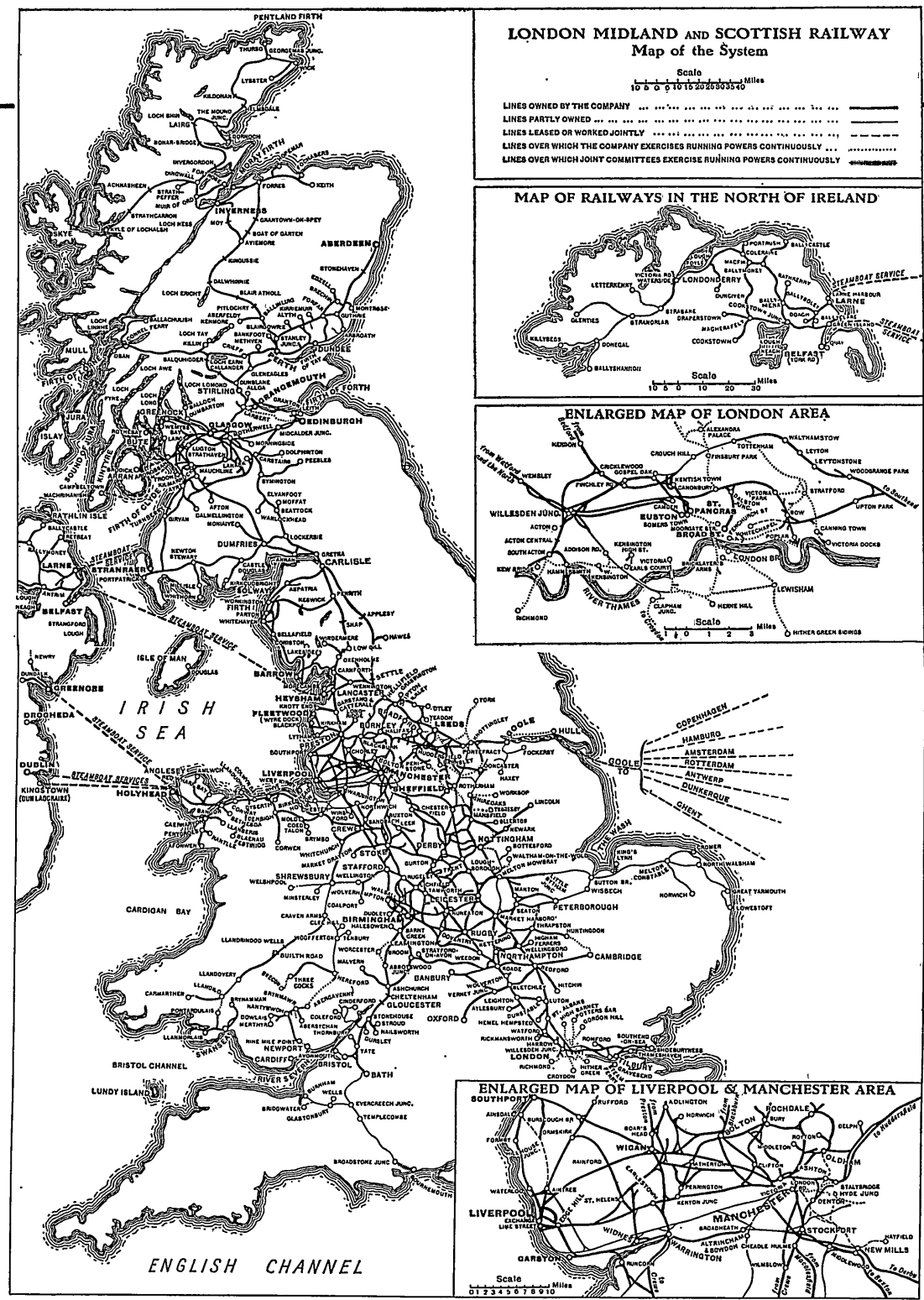
LONDON MIDLAND & SCOTTISH
RAILWAY

THIS WAY TO
THE TRAINS



INTRODUCTION

The extent of the L.M.S.R. system, 1938.



The LMS Society.

The LMS Society was founded in 1963 by a group of enthusiasts with the aim of collecting and making available information on what was once the world's largest railway company, namely the London Midland and Scottish Railway.

Right from the start it was decided that this collecting and disseminating of information would be the principal activity and this remains the Society policy today. From that decision two offers followed. First there would be no attempt to create a large society since, it was felt, experience had shown that by doing so the energies of the more enthusiastic members would inevitably be diverted away from research into the LMS Railway and into the very necessary but unproductive administrative work associated with running a large society.

Consequently we have actually set out to restrict membership to a small number all of whom are prepared to make a definite contribution to our aims.

Secondly it followed from the above that having agreed to limit membership, information on the LMS must be freely available to any enquirer and again this is definite Society policy. Since 1963 much has been published either in book form or in articles in various journals but over and above this, members are always prepared to answer queries to the best of their ability subject only to the condition that the enquirer meets postage and similar expenses.

The Dillington House Teach-In together with a similar one previously run at Keen House are part of the Society's policy of making available information on the LMS. It is hoped to organise further events on these lines as circumstances permit.

This is probably an appropriate point to stress that time is passing. It is now (January 1978) 55 years since the LMS was formed and 30 years since it ceased to exist. Physical evidence of the LMS disappears daily. The number of people who knew the company or who worked for it, (especially in responsible positions) inevitably becomes fewer as time goes by. The passage of time and cost of storage combine to reduce the amount of information on the railway that is available

for study. For these reasons alone the Society is always pleased to know of any information which may assist its work. One of the principal sources of such items nowadays is amongst the personal effects of deceased railwaymen. All too often books, pamphlets, photographs and the like are thrown away as 'rubbish' and anyone knowing of such cases is invited to contact the Society or, should they prefer it, the National Railway Museum, York.

D. P. Rowland,
Hon. Chairman.

A generation of railway enthusiasts accustomed to hearing of British Rail's multi-million pound deficits, Beeching's axe and subsidies for unremunerative services may be tempted to believe that our railways have had financial problems only since nationalisation in 1948. Certainly prior to World War I British railways were almost universally profitable and popular railway writers concentrating their attention on the prestige expresses of the inter-war years have tended to give the impression that all was similarly rosy for the railways in 1939. Later notes will detail many of the very solid achievements of the LMS during its lifetime but they must be seen against the economic conditions of the inter-war years. Before considering what the LMS was and what it did let us examine the background against which it operated.

The problems can be summarised thus:-

1. Road competition.
2. Trade recession.

They have a familiar ring. To these two can be added another not unfamiliar handicap, outdated legislation. The 1921 Railways Act (to take this last point first) assumed the railways had a virtual transport monopoly. They were not allowed to show undue preference to any customer whilst their road competitors had complete freedom. The 1930 Road Transport Act went some way to redressing the balance but by 1939 the railways were pressing strongly for a 'Fair Deal' policy, to redress the balance.

Road Competition

The trams had made inroads into passenger traffic before 1923, in and around large towns. After grouping the bus and later the private car did the same for 'out of town' passenger traffic. Motor car registrations rose dramatically more than doubling in nine years viz.

	<u>1929</u>	<u>1938</u>
Motor Car Registrations (taxed on H.P.)	980,886	1,944,394

So far as freight traffic was concerned, it was largely the lucrative merchandise traffic that was siphoned off by road transport. Again registrations illustrate the point:-

	<u>1929</u>	<u>1938</u>
Lorry registrations (inc. agric.)	326,688	486,094

Trade Recession

As a steel and coal carrier the LMS (like the LNER) was badly hit by the recession. Pit and iron works closures were frequent. As a result LMS revenues dropped significantly as follows:-

	<u>1923</u>	<u>1933</u>	<u>1939</u>
(£ millions)		(Low Point)	
Passenger	32.6		27.1
Goods	46.3		36.5
Miscell.	0.8		0.6
	<u>79.7</u>	<u>58.2</u>	<u>64.2</u>

Reaction

The LMS reaction was predictable. Wages were reduced as were numbers of staff employed. In four years (29-33) they dropped from 245,412 to 215,509. The LMS never passed up a preference dividend but for four years it paid no ordinary dividend and, let us remember, 1938 was one of these four lean years.

Against this background the LMS Management continued to invest money in their business whilst at the same time striving to improve their efficiency. Looked at in retrospect this was an act of faith. But by 1939 the LMS was in fine shape as its wartime performance was to show. On the other hand the main beneficiaries were not the shareholders but the nation as a whole.

From the 1st January, 1923 the LMS Railway took over the operations of eight constituent and twenty-seven subsidiary railway companies to provide rail, road, dock and sea services, and at a later date - 10 May, 1929 - Air Services following the passing of the LMS Air Transport Act.

With an Authorised Capital of £424 million, a staff of more than a quarter of a million, upwards of 8,000 passenger trains (excluding electric trains) and 17,000 freight trains each day, the LMS was the largest railway company in the world. The LMS owned around 6,800 route miles and 19,200 track miles, around 2,450 passenger and 2,900 goods stations and over 4,000 private sidings.

The Company had its own Police Service working alongside the public force and had substantial investments in 17 omnibus companies. A private telephone network aided communications throughout the system.

The LMS had two Boards of Directors - the main one plus a separate one for Scotland. Considering there was only one lot of capital with apparently no attempt to allocate it, the existence of the two Boards was rather unusual.

Headquarters Organisation

The LMS was headed by a President aided by 4 Vice-Presidents, and a Company Secretary. All of whom formed the Executive Committee.

Under the Vice-Presidents the following departments were grouped under five divisions:-

1. Revenue Obtaining

Chief Commercial Manager.

2. Operating

Chief Operating Manager.
Chief Marine Superintendent.

3. Maintaining

Chief Civil Engineer.
Chief Mechanical Engineer.
Signal and Telegraph Engineer.
Road Motor Engineer.
Chief Marine Superintendent - (Included in both Operating and Maintenance).

4. Administrative

Chief Solicitor.
Secretary.
Chief Accountant.
Chief Stores Superintendent.
Chief Officer for Labour and Establishment.
Research Managers, Scientific and General.
Chief Officer for Scotland.

5. Auxiliary Services

Estate Manager and Rating Agent.
Chief Hotels Superintendent.
Chief of Police.
Chief Medical Officer.
Principal School of Transport (Just pre-war).

All matters of major importance were seen by the President and each Vice-President, and the Executive Committee met once or twice a week as required to co-ordinate action and agree policy matters for recommendation to the Board of Directors. The Executive Committee reviewed all matters concerning the LMS.

Each Head of Department had a line organisation to support him with appropriate divisional or district officers responsible for carrying out his instructions. The line organisation in the different departments varied according to the work of the department.

For Commercial purposes the area or district organisation was dictated by the location of population and industry. On the operating side, however, traffic flow dictated the boundaries of particular areas. Many more areas of control were required in some departments than in others.

A review of the line operation of management was undertaken by the LMS prior to the 1939 outbreak of war, and a start had been made in making some of the line or district areas of the principal departments co-terminus as the characteristics were in some cases favourable and a streamlining process ensued. These changes were not completed prior to the war and at the end of the war a start had been made on extending the co-terminus principal.

Certain functions were centralised in the early years of the LMS to ensure standardisation over the whole system on all major issues, and to establish a base for later decentralisation of day-to-day operations.

Early stages of centralisation covered:-

Purchasing

Accounting
Research
Motor Power Policy and other operational aspects - Signal & Telegraph, Civil Engineers.

Decentralised functions included:-

Day-to-day track and building maintenance.
Traffic Operation.
Commercial work generally.

Line Organisation

Chief Commercial Managers Department, England and Wales

8 District Goods Managers *
6 District Goods and Passenger Managers
1 District Goods, Passenger and Docks Manager
5 District Passenger Managers *
3 Docks and Port Officers
2 District Traffic Managers
1 Irish Traffic Manager

* Separate Officials in large centres.

Chief Operating Managers Department (E & W)

3 Divisional Operating Managers
18 District Operating Managers
29 District Locomotive Superintendents

Scottish Organisation in the CCM & COM Depts.

1 Commercial Manager
1 Operating Manager
7 District Goods and Passenger Managers
6 District Locomotive Superintendents

Chief Marine Superintendents Department

2 Marine Supts. and Harbour Masters
1 Steamship Supt. (Scotland)
1 Marine Superintendent
2 Marine Engineers
1 Dock, Harbour and Dredging Master
1 Dredging Master
1 Harbour Master
1 Ferry Superintendent

Chief Mechanical Engineers Department

1 Mechanical and Electrical Engineer (Scotland)
3 Loco Works Superintendents
3 Carriage and Wagon Works Superintendents
8 District Outdoor Machinery Assistants
4 Divisional C & W Assistants
47 District C & W Foremen

Chief Civil Engineers Department

17 District Engineers - England and Wales
1 Divisional Engineer (Scotland)
5 District Engineers (Scotland)

Signal and Telegraph Engineers Department

4 Divisional Signal and Telegraph Engineers

Road Motor Engineers Department

5 District Road Motor Engineers

To ensure regular and proper communication between Departments and District Officers a series of Departmental Co-ordination Committees consisting of representatives of the different Departmental, District or Area Officers met regularly once a month. Matters considered included new works schemes, use of plant, programmes of maintenance and renewal and features affecting other departments or divisions.

In addition, four "Shunting Analysis Committees" - one in each Division - met regularly to analyse the passage of freight wagons through marshalling yards, to determine changes in the then known flows of traffic, and make any adjustments required to the working timetables or staff and power requirements.

Little known activities in the LMS organisation included the following:-

Laundries

Provision of laundering facilities for the Company's Hotel chain.

Sheeting Factories

486 staff were employed in four sheeting factories at St. Helens Junction, Trent, Manchester (Osborne St.), and Glasgow manufacture and repair of wagon sheets, cartage sheets, linen sheets for wool traffic and maintenance of wagon ropes and cutting new rope to lengths required.

Sack Depot

At its depot at Trent the Company bought, repaired and cleaned sacks for carrying grain and for hiring to farmers and other rail users. 1½ million sacks were in use in 1946 and hire receipts amounted to £86,000.

Clothing Factory

At Manchester, Osborne Street, an up-to-date clothing factory supplied around 1/3rd of the total uniform clothing supplied to the Company staff in 1946.

Watch and Clock Repair Department

Another department located at Osborne Street premises in Manchester, carrying out repairs to all guard's watches and clocks for the Manchester Area.

Civil Engineers Department - Creosoting Depots

Two depots employing 136 men preparing sleepers and other timbers for outdoor use. Annual output exceeded 1 million sleepers.

Pre-cast Concrete Works

Established 1938 at Merrion Heath to co-ordinate increased production for pre-cast concrete items, employing 150 men.

Sleepers, fencing and other posts, bins, flagstones, copings etc. included in a range of 50 articles. Concrete air-raid shelters for staff protection in war years were manufactured at this depot.

This then is a brief resumé of the LMS organisation based on the Company's own Organisational Instructions.

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LOCOMOTIVE STOCK

Locomotives at Grouping.

D.F.Tee.

TABLE I LOCOMOTIVES TAKEN INTO LMS RUNNING STOCK. 1st JANUARY 1923 (BASED ON OFFICIAL RETURNS.)

SEVERAL OF THE LOCOMOTIVES LISTED BELOW, WITHDRAWN IN 1923, WERE NEVER ALLOTTED LMS NUMBERS. MANY OTHERS, ALTHOUGH ALLOTTED LMS NUMBERS, WERE WITHDRAWN FROM SERVICE BEFORE RECEIVING THE NEW NUMBER. FOR DEPARTMENTAL LOCOMOTIVES, SEE TABLE 2. STEAM RAIL MOTORS NOT INCLUDED.

LMS No SERIES	1- 4026			5000 9645		10000 - 12994					14000 17997			LMS TOTAL		
	PRE-GROUP COMPANY.	M.R.	SM.J.	NSR.	LNWR DIV A ^(c)	WR.	LNWR DIV B ^(c)	KER	F.R.	G#WJ	M#CR	CR	G#SW.		G#P.J.	H.R.
0.10.0		1														1
2.8.0					48											48
0.8.0					553		295					8				856
4.6.0					650		34					65	19		50	818
2.6.0												5	11			16
0.6.0	1600	12	47	624		540		62		19	386	177		12	3479	
4.4.2						40										40
4.4.0	386		5	299		71		20			171	181		80	1213	
2.4.0	245	1		112		1		1		3		3		3	369	
0.4.2										6	20	55				81
4.2.2	43															43
TOTAL TENDER.	2275	13	52	2286	-	981	-	83	-	28	655	446	-	145	6964	
0.8.2T				30		5										35
0.8.0T											6					6
4.6.4T	8							5				6				19
4.6.2T				47								12				59
2.6.4T			2(b)													2
2.6.2T						18										18
2.6.0T								1								1
0.6.4T	40		16		2									8		66
0.6.2T	14		36	369		21(a)		23				28				491(a)
0.6.0T	353		54	313		239(e)	3	16	6	1	202	18		6		1211(a)
4.4.4T					2											2
4.4.2T	70		7	50	1			6								134
4.4.0T				78								12				98
2.4.2T			6	243	5	329		2								585
2.4.0T			12	15											1	28
0.4.4T	226		9		7					1	141	20		5		409
0.4.2T				21						1	2					24
0.4.0T	33			17		61(f)		1		2	39	9	2			164(f)
TOTAL TANK	744	-	142	1183	17	673	4	53	6	5	414	81	2	28		3352
TOTALS.	3019 (a)	13	194	3469 (d)	17	1654	4	136 (h)	6	33	1069 (j)	527 (k)	2	173		10316 (f)

Abbreviations.

- C.R. CALEDONIAN RAILWAY.
- C#WJ CLEATOR & WORKINGTON JUNCT RLY.
- F.R. FURNESS RAILWAY.
- G#P.J. GLASGOW & PAISLEY JOINT RAILWAY.
- G#SW GLASGOW & SOUTH WESTERN RLY.
- H.R. HIGHLAND RAILWAY.
- KER. KNOTT END RAILWAY (6).
- L#Y LANCASHIRE & YORKSHIRE RLY. (c)
- LNWR LONDON & NORTH WESTERN RLY. (c).
- LT#SR LONDON, TILBURY & SOUTHBEND RLY.
- M#C MARYPORT & CARLISLE RLY.
- M.R. MIDLAND RAILWAY.
- NLR NORTH LONDON RAILWAY.
- NSR. NORTH STAFFORDSHIRE RAILWAY.
- SMJ. STRATFORD-UPON AVON & MIDLAND JCT RLY.
- S#W SEVERN & WYE & SEVERN BRIDGE RLY.
- WC#E WHITEHAVEN, CLEATOR & EGREMONT RLY.
- W.R. WIRRAL RAILWAY.

Notes.

- (a) M.R. total includes 2 locomotives ex S#W 1895, 82 locomotives ex LT#SR 1912 and 12 locomotives of LT#SR design delivered direct to M.R.
- (b) Narrow gauge locomotives Ex Lezek & Manifold Rly (Not given LMS Nos.
- (c) LNWR & L#Y amalgamated 1st Jan 1922 with title 'LNWR' locomotive stock of two constituent companies continued to be numbered in separate series, referred to as LNWR Division 'A' (formerly LNWR, and LNWR Division B (formerly L#Y).
- (d) LNWR Division A total includes 109 locomotives ex NLR. (12 acquired 1909, 97 acquired 1922) and 50 2-8-0's of Great Central Rly design ex Ministry of Munitions.
- (e) Owing to an error in the official returns the combined LNWR divisions A & B figures were given incorrectly as 621-391 and 0.6.0T-551 making LMS totals appear as 0.6.2T-492 and 0.6.0T-1210. This error, which actually appeared in the division B figures has been corrected in the table. LNWR Division B 0.4.0T total included 3 petrol locomotives (not given LMS numbers) hence LMS STEAM 0.4.0T total was 161, and LMS STEAM total was 10313.
- (f) Knott End Railway was known as Garstang & Knott End Railway until 1908.
- (g) Furness Railway total includes 2 locomotives ex WC#E.
- (h) Caledonian Railway total includes 2 locomotives ex Solway Junction Railway; Official C.R. total was 1070 which included 1 G#P.J. engine, shown separately in the table.
- (i) Official total was 528 which included 1 G#P.J. engine, shown separately in the table.

TABLE 2 LOCOMOTIVES TAKEN INTO LMS DEPARTMENTAL STOCK FROM PRE-GROUP COMPANIES 1st Jan 1923

NO LMS NUMBERS WERE ALLOTTED TO ANY OF THE 37 LNWR DIVISION A LOCOMOTIVES, NOR TO THE DIVISION B ELECTRIC LOCOMOTIVES AND THE SOLITARY FURNESS DEPARTMENTAL LOCOMOTIVE.

PRE-GROUP COMPANY	LNWR DIVA	LNWR DNB	FR.	C.R.	G.S.W.	LMS TOTAL
0.6.0			1	3 (a)		4
2.4.0	11					11
0.4.2				1 (b)		1
4.2.2				1 (b)		1
2.2.2	1					1
TOTAL TENDER	12	-	1	5	-	18
0.6.2T		1				1
0.6.0T	7	5		2 (a)		14
0.4.2T	8					8
0.4.0T	10			1	1	12
TOTAL TANK	25	6	-	3	1	35
TOTAL STEAM	37	6	1	8	1	53
ELECTRIC	-	1	-	-	-	1
TOTAL	37	7	1	8	1	54.

NOTES

- (a) RETURNED TO RUNNING STOCK 1923
- (b) RETURNED TO RUNNING STOCK 1925.

IN ADDITION TO THE LOCOMOTIVES TABULATED, THERE WERE A NUMBER OF MISCELLANEOUS LOCOMOTIVES, INCLUDING ONE MR BATTERY ELECTRIC, AND ONE N&R BATTERY ELECTRIC, ALSO THE CREWE WORKS & HORWICH WORKS NARROW GAUGE ENGINES.

LMS Number Allocations, 1923

D.F.Tee.

<u>LMS 1923 NUMBER ALLOCATIONS - PRE-GROUP AND NON-STANDARD POST-GROUP LOCOMOTIVES</u>						<u>LMS NUMBER</u> <u>SERIES</u>	<u>PRE-GROUP</u> <u>COMPANY</u>	<u>WHEEL</u> <u>ARRANGEMENT</u>	<u>LOCOMOTIVE TYPE/CLASS</u>	<u>POWER</u> <u>1923</u>	<u>CLASS</u> <u>1928</u>
<u>Note:</u> - This table includes all pre-group locomotives which were allocated LMS Capital stock running numbers. It should, however, be appreciated that a considerable number of engines were scrapped too soon after the grouping to receive their allotted LMS series numbers.						1005-1044	MR	4-4-0	Deeley 3-cylinder compound	4	4P
						1200-1226	MR	0-4-4 T	Kirtley design (outside frame)	1	1P
						1227-1430	MR	0-4-4T	Johnson design	1	1P
						1431-1439	NSR	0-4-4T	Adams Class M	3	3P
						1440-1451	NSR	2-4-0T	Longbottom Class B	1	1P
<u>LMS NUMBER</u> <u>SERIES</u>	<u>PRE-GROUP</u> <u>COMPANY</u>	<u>WHEEL</u> <u>ARRANGEMENT</u>	<u>LOCOMOTIVE TYPE/CLASS</u>	<u>POWER</u> <u>1923</u>	<u>CLASS</u> <u>1928</u>	1454-1459	NSR	2-4-2T	Longbottom Class A and B	1	1P
1-22	MR	2-4-0	Kirtley 6'3" design (outside frame)	1	1P	1500-1525	MR	0-4-OST	Johnson design	-	OF
23-67	MR	2-4-0	Kirtley 6'8" design (outside frame)	1	1P	1528-1537	MR	0-4-OT	Deeley design	-	OF
68-126	MR	2-4-0	Rebuilt Kirtley 6'8½" design)inside	1	1P	1550-1598	NSR	0-6-OT	Longbottom Class D	2	2F
127-146	MR	2-4-0	Rebuilt Kirtley 6'3")frame design)	1	1P	1599	NSR	0-6-OT	Hookham experimental 4-cylinder design, rebuilt in 1923 to 0-6-0 tender type	-	-
147-156	MR	2-4-0	Johnson 6'3" design	1	1P	1600-1601	NSR	0-6-OST	Hudswell-Clarke design	1	1F
157-191	MR	2-4-0	Johnson 6'6" design	1	1P	1602-1603	NSR	0-6-OT	Kerr-Stuart design	1	1F
192-196	MR	2-4-0	Johnson 6'9" design (1400 Class)	1	1P	1605-1608	MR	0-6-OT	Pre-Kirtley designs	1	-
197-206	MR	2-4-0	Johnson 7'0" design	1	1P	1611-1619	MR	0-6-OT	Rebuilt Kirtley design	1	-
207-216	MR	2-4-0	Johnson 6'9" design (as per 192-6)	1	1P	1620-1899	MR	0-6-OT	Johnson design	1	1F
217-221	MR	2-4-0	Johnson 6'6" design (as per 157-91)	1	1P	1900-1959	MR	0-6-OT	Rebuilt Johnson 'heavy' freight tank	3	3F
222-271	MR	2-4-0	Johnson 6'9" design (as per 192-6)	1	1P	2000-2039	MR	0-6-4T	Deeley design	3	3P
272-281	MR	2-4-0	Johnson 7'0" design (as per 197-206)	1	1P	2040-2047	NSR	0-6-4T	Adams Class C	5	-
290	SMJR	2-4-0		1	-	2048-2055	NSR	0-6-4T	Adams/Hookham Class F	4	4P
300-309	MR	4-4-0	Johnson 6'6" design (unrebuilt)	1	1P	2100-2107	MR (LT & SR)	4-6-4T	Whitelegg design	3	3P
310-327	MR	4-4-0	Johnson 7'0" design (unrebuilt)	1	1P	2110-2145	MR (LT & SR)	4-4-2T	Whitelegg design	1	1P
328-562	MR	4-4-0	Rebuilt Johnson designs and Fowler superheated design	2	2P	2110-2134	MR (LT & SR)	4-4-2T	LMS built version of final LT & SR type	3	3P
595-598	NSR	4-4-0	Adams Class G	3	3P	2151-2160 (Second Numbers)					
599	NSR	4-4-0	Adams Class KT	3	-	2146-2157	MR (LT & SR)	4-4-2T	Whitelegg design (rebuilt ex-Class 2)	3	3P
600-683	MR	4-2-2	Johnson designs	1	-	2158-2175	MR (LT & SR)	4-4-2T	Whitelegg design	2	2P
700-779	MR	4-4-0	Johnson 'Belpaire' Class	3	3P	2176-2179	MR (LT & SR)	4-4-2T	Whitelegg design (rebuilt new as Class 3)	3	3P
990-999	MR	4-4-0	Deeley 2-cylinder simple design	4	-						
1000-1004	MR	4-4-0	Johnson/Deeley 3-cylinder compound	4	4P						

<u>LMS NUMBER</u> <u>SERIES</u>	<u>PRE-GROUP</u> <u>COMPANY</u>	<u>WHEEL</u> <u>ARRANGEMENT</u>	<u>LOCOMOTIVE TYPE/CLASS</u>	<u>POWER</u> <u>1923</u>	<u>CLASS</u> <u>1928</u>	<u>LMS NUMBER</u> <u>SERIES</u>	<u>PRE-GROUP</u> <u>COMPANY</u>	<u>WHEEL</u> <u>ARRANGEMENT</u>	<u>LOCOMOTIVE TYPE/CLASS</u>	<u>POWER</u> <u>1923</u>	<u>CLASS</u> <u>1928</u>	
2180-2186	NSR	4-4-2T	Adams Class K	3	3P	5108-5130	LNWR	4-4-0	Webb 'Alfred the Great' Class (Compound)	2	-	
2220-2233	MR (LT & SR)	0-6-2T	Whitelegg design	3	3F	5131-5186	LNWR	4-4-0	Webb 'Renown' Class (Simple)	2	2P	
2234-2239	NSR	0-6-2T	Longbottom Class DX	2	2F	5187-5266	LNWR	4-4-0	Whale 'Precursor' Class (saturated)	2	2P	
2240-2273	NSR	0-6-2T	Adams Class L	3	3F	5270-5319	LNWR	4-4-0	Whale 'Precursor' Class (superheated)	3	3P	
2290	MR	0-10-0	Fowler Banking engine	Unclassified								
2300-2302	SMJR	0-6-0	Beyer-Peacock design	Unclassified		5320-5409	LNWR	4-4-0	Bowen-Cooke 'George the Fifth' Class	3	3P	
2303	SMJR	0-6-0	Stroudley (ex-LB & SCR) design	Unclassified		5450-5554	LNWR	4-6-0	Whale 'Experiment' Class	3	3P	
2304-2311	SMJR	0-6-0	Beyer-Peacock design	Unclassified		5600-5845	LNWR	4-6-0	Bowen-Cooke 'Prince of Wales' Class	4	4P	
2320-2342	NSR	0-6-0	Clare Class E	1	1F							
2343-2350	NSR	0-6-0	Longbottom Class 100	2	2F	5900-6029	LNWR	4-6-0	Bowen-Cooke 'Sir Gilbert Cloughton' Class	5	5P	
2351-2356	NSR	0-6-0	Longbottom Class 159	2	2F	6400-6419	LNWR	0-4-2ST	Webb design (wrongly classified as passenger tanks and later numbered more logically as 7850-69 in the freight tank series)	1	1F	
2357-2358	NSR	0-6-0	Longbottom Class 100	2	2F							
2359-2366	NSR	0-6-0	Adams Class H	3	3F							
2367	NSR	0-6-0	Hookham 4-cylinder type (ex-No. 1599)	3	-	6420-6434	LNWR	2-4-0T	Webb design	1	1F	
2369)	MR	0-6-0	Kirtley 'straight frame' engines whose ex-MR numbers in the lower 23xx series were required for NSR locomotives. Outside frame type.	1	-	6435-6438	LNWR(NLR)	4-4-0T	Adams design	1	-	
2382-2398)							6439-6512	LNWR(NLR)	4-4-0T	Park design	1	1P
							6515-6600	LNWR	2-4-2T	Webb 4'6" design	1	1P
2399-2867	MR	0-6-0	Kirtley design (curved top outside frame type)	1 & 2	1F & 2F	6601-6757	LNWR	2-4-2T	Webb 5'6" design	1	1P	
2898-2899	MR (LT & SR)	0-6-0	Engines originally built for the Ottoman Railway	2	2F	6758-6761	WIRRAL	2-4-2T	Webb (ex-LNWR) 4'6" design	1	1P	
						6762	WIRRAL	2-4-2T	Aspinall (ex-LYR) design	2	2P	
2900-3135	MR	0-6-0	Johnson design	2	2F	6770-6775	WIRRAL	0-4-4T		1	-	
3136-3764	MR	0-6-0	Johnson design as per 2900-3135, 2 & 3 plus rebuilds to Class 3 (numbers intermixed)	2 & 3	2F & 3F	6776	WIRRAL	0-4-4T		2	2P	
						6780-6829	LNWR	4-4-2T	Whale 'Precursor' Tank	3	3P	
3765-3834	MR	0-6-0	Johnson/Deeley designs	3	3F	6830	WIRRAL	4-4-2T		1	-	
3835-4026	MR	0-6-0	Fowler design	4	4F	6850-6851	WIRRAL	4-4-4T	Barber design	1	-	
5000-5079	LNWR	2-4-0	Webb 'Precedent' Class	1	1P	6860-6936	LNWR	0-6-2T	Webb 'Watford' Tank	2	2P	
5080-5109	LNWR	2-4-0	Webb 'Waterloo' Class	1	1P	6948-6949	WIRRAL	0-6-4T		2	-	
5110-5107	LNWR	4-4-0	Webb 'Jubilee' Class (Compound)	2	-	6950-6996	LNWR	4-6-2T	Bowen-Cooke 'Prince of Wales' Tank	4	4P	

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7200-7205	LNWR	0-4-OT	Webb design well tanks for works use	-	-	10005-10007	M & CR	2-4-0	Smellie design	-	-
7206-7216	LNWR	0-4-OST	Ramsbottom design	-	OF	10010-10013	M & CR	0-4-2	Smellie design	1	-
7217	LNWR(NLR)	0-4-2ST	Sharp Stewart Crane engine	-	-	10100-10101	LYR	4-4-0	Barton-Wright Class J2	2	2P
7220-7457	LNWR	0-6-OST	Ramsbottom 'Special' Tank	2	2F	10102-10130	LYR	4-4-0	Barton-Wright Class J3	2	2P
7458-7502	LNWR	0-6-OST	Webb design with 'square' saddle	2	2F	10131-10134	FR	4-4-0	Barton-Wright 5'7½" design	1	1P
7503-7532	LNWR(NLR)	0-6-OT	Park design	2	2F	10135-10142	FR	4-4-0	Pettigrew 6'0" design	1	1P
7550-7841	LNWR	0-6-2T	Webb 'Coal' Tank	2	2F	10143-10146	FR	4-4-0	Pettigrew 6'6" design	1	1P
7870-7899	LNWR	0-8-2T	Bowen-Cooke design	6	6F	10150-10183	LYR	4-4-0	Aspinall Class J4	2	2P
7930-7959	LNWR	0-8-4T	Beames design (built by LMS)	7	7F	10185-10188	FR	4-4-0	Pettigrew 6'0" design	2	2P
8000-8087	LNWR	0-6-0	Ramsbottom 'DX' Class	1	1F	10190-10195	LYR	4-4-0	Aspinall Class J5	2	2P
8088-8314	LNWR	0-6-0	Webb 'Coal' engines	2	2F	10300-10339	LYR	4-4-2	Aspinall 1400 Class	3	3P
8315-8624	LNWR	0-6-0	Webb 'Cauliflowers'	2	2F	10400-10404	LYR	4-6-0	Hughes Class N1 (saturated)		
8700-8869	LNWR	4-6-0	Whale '19" Goods'	4	4F	10405-10474	LYR	4-6-0	Hughes Class N1 (superheated) - some LMS built	5	5P
8900-8943	LNWR	0-8-0	Webb 'B' Class (Compound)	3	-	10600-10617	LYR	0-4-OT	Hughes Railmotor	-	-
8944	LNWR	0-8-0	Bowen-Cooke 'G' Class (ex-'B' Class)	6	6F	10618	M & CR	0-4-4T	'Maryport' designs	-	-
8945-8952	LNWR	0-8-0	Webb 'B' Class (Compound)	3	3F	10619-10620	FR	2-4-2T	Rebuild of 2-4-0 type	-	-
8953-8967	LNWR	0-8-0	Whale 'C' Class	4	4F	10621-10821	LYR	2-4-2T	Aspinall design (short bunker)	2	2P
8968-9001	LNWR	0-8-0	Whale 'C1' Class	3	3F	10822-10899	LYR	2-4-2T	Aspinall/Hughes design (long bunker)	2	2P
9002-9064	LNWR	0-8-0	Whale 'D' Class	5	5F	10900-10954	LYR	2-4-2T	Hughes design (superheated)	3	3P
9065-9153	LNWR	0-8-0	Whale 'G' Class	5	5F	11080-11085	FR	4-4-2T	Pettigrew design	1	1P
9154-9394	LNWR	0-8-0	Bowen-Cooke 'G1' Class	6	6F	11100-11104	FR	4-6-4T	Rutherford design	4	4P
9395-9454	LNWR	0-8-0	Bowen-Cooke 'G2' Class	7	7F	11110-11119	LYR	4-6-4T	Hughes design (built by LMS)	5	5P
9600-9609	LNWR	2-8-0	Webb 'E' Class (Compound)	3	-	11200-11257	LYR	0-4-OST	Aspinall design	-	OF
9610-9615	LNWR	2-8-0	Webb 'F' Class (Compound)	3	-	11258	FR	0-4-OST	Sharp Stuart	-	-
9616-9665	ex-ROD	2-8-0	Robinson GCR design	7	7F	11259-11260	M & CR	0-4-OST	Neilson	-	-
10000	LYR	2-4-0	Ramsbottom (ex-LNWR) design modified as CME's personal coupe	-	-	11300-11301	GKER	0-6-OST	Hudswell-Clarke design	-	-
						11302	GKER	0-6-OT	Manning-Wardle design	-	-
10002	FR	2-4-0	Sharp Stuart	-	-	11303-11532	LYR	0-6-OST	Barton-Wright/Aspinall design	2	2P

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11533-11546	LYR	0-6-OT	Aspinall Dock Tank	3	1F	12840-12994	LYR	0-8-0	Hughes Class Q4 (large boiler, superheated)	7	7F
11547-11548	FR	0-6-OT	Ex-Whitehaven, Cleator and Egremont Railway design	-	-	14000	GSWR	2-4-0	Stirling design	-	-
11549-11552	FR	0-6-OT	Sharp Stewart design	1	-	14001-14002	GSWR	2-4-0	Smellie design	-	-
11553-11562	FR	0-6-OT	Pettigrew design	2	2F	14010	CR	4-2-2	Neilson design	1	1P
11563	M & CR	0-6-OT	Rebuild of 0-4-2T	1	-	14100-14107	CR	4-4-0	Brittain design ('Oban Bogies')	1	1P
11564-11568	C & WR	0-6-OST		1 & 2	-	14108-14115	CR	4-4-0	Drummond design	1	1P
11600-11601	LYR	0-6-2T	Barton Wright Class H2	1	1F	14116-14137	GSWR	4-4-0	Smellie 6'11" design	) ) ) ) ) 1 & 2	1P & 2P
11602-11621	LYR	0-6-2T	Barton Wright Class H3	1	1F	14138-14156	GSWR	4-4-0	Smellie 6'9 1/2" design		
11622-11624	FR	0-6-2T	Pettigrew 4'8" design	3	-	14157-14202	GSWR	4-4-0	Manson 6'9 1/2" design		
11625-11640	FR	0-6-2T	Pettigrew 5'1" design	3	3F	14203-14227	GSWR	4-4-0	Manson 6'11" design		
11641-11644	FR	0-6-2T	Pettigrew 4'7 1/2" design	3	3F	14228-14243	GSWR	4-4-0	Stirling 7'1" design		
11680	GKER	2-6-OT	Manning-Wardle design	1	-	14244-14270	GSWR	4-4-0	Manson 6'9 1/2" design		
11700-11716	LYR	2-6-2T	Hoy Class M1	-	-	14271-14276	HR	4-4-0	Jones 'Strath' Class	1	1P
11800-11804	LYR	0-8-2T	Hughes Class R1	6	6F	14277	HR	4-4-0	Jones 'Skye Bogie'	1	1P
12000-12014	FR	0-6-0	Sharp Stewart design	1	-	14278	HR	4-4-0	Jones 'Bruce' Class	1	1P
12015-12064	LYR	0-6-0	Barton Wright Class F15	2	2F	14279-14285	HR	4-4-0	Jones 'Skye Bogie'	1	1P
12065-12076	FR	0-6-0	Sharp Stewart/Pettigrew design	1	1F	14290-14310	CR	4-4-0	Drummond/Lambie design	2	2P
12077-12082	M & CR	0-6-0		1	-	14311-14325	CR	4-4-0	McIntosh 'Dunalastair I' Class	) ) ) ) satu- rated	2 2P
12083-12467	LYR	0-6-0	Aspinall Class F19	2	3F	14326-14336	CR	4-4-0	McIntosh 'Dunalastair II' Class		
12468-12479	FR	0-6-0	Pettigrew 4'8" design	2	2F	14337-14348	CR	4-4-0	McIntosh 'Dunalastair III' Class		
12480-12483	FR	0-6-0	Pettigrew 5'1" design	2	2F	14349-14365	CR	4-4-0	McIntosh 'Dunalastair IV' Class		
12484-12493	M & CR	0-6-0		2	2F	14366-14378	GSWR	4-4-0	Manson 6'9 1/2" design	2	2P
12494-12512	FR	0-6-0	Pettigrew 4'7 1/2" design	3	3F	14379-14396	HR	4-4-0	Jones 'Loch' Class	2	2P
12513-12514	M & CR	0-6-0		3	3F	14397-14416	HR	4-4-0	Drummond 'Small Ben' Class	2	2P
12515-12619	LYR	0-6-0	Aspinall/Hughes Class F21/22	3	3F	14417-14422	HR	4-4-0	Drummond 'Large Ben' Class	2	2P
12700-12759	LYR	0-8-0	Aspinall Class Q1 (small boiler)	6	6F	14430-14433	CR	4-4-0	McIntosh 'Dunalastair II' Class	3	3P
12760-12770	LYR	0-8-0	Hughes Class Q2 (Compound)	6	-	14434-14437	CR	4-4-0	McIntosh 'Dunalastair III' Class	)super- heated	3 3P
12771-12839	LYR	0-8-0	Hughes Class Q3 (large boiler, saturated)	6	6F	14438-14460	CR	4-4-0	McIntosh 'Dunalastair IV' Class		
						14461-14508	CR	4-4-0	Pickersgill design	3	3P

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14509	GSWR	4-4-0	Whitelegg 4-cylinder design	3	3P	17202-17212	GSWR	0-6-0	Smellie design	2	2F
14510-14521	GSWR	4-4-0	Drummond design	3	3P						
14522-14523	HR	4-4-0	Cumming design	3	3P	17230-17473	CR	0-6-0	Drummond 'Jumbo' design	2	2F
14600-14608	CR	4-6-0	McIntosh 55 Class	3	3P						
14609-14618	CR	4-6-0	McIntosh 908 Class	3	3P	17474-17524	GSWR	0-6-0	Manson designs	2&3	2F&3F
14619-14626	CR	4-6-0	Pickersgill 191 Class	3	3P						
14630-14655	CR	4-6-0	Pickersgill 60 Class (some built by LMS)	4	4P	17550-17645	CR	0-6-0	McIntosh 812 Class	3	3F
14656-14674	GSWR	4-6-0	Manson design	3	3P	17646-17649	CR	0-6-0	McIntosh 30 Class	3	3F
14675-14693	HR	4-6-0	Drummond 'Castle' Class	3	3P						
14750-14751	CR	4-6-0	McIntosh 50 Class	4	4P	17650-17692	CR	0-6-0	Pickersgill design	3	3F
14752-14755	CR	4-6-0	McIntosh 903 Class	4	4P						
14756-14761	CR	4-6-0	Smith 'River' Class (designed for HR)	4	4P	17693-17704	HR	0-6-0	Drummond design	3	3F
14762-14769	HR	4-6-0	Cumming 'Clan' Class	4	4P						
14800-14803	CR	4-6-0	Pickersgill 956 Class	5	5P	17750-17764	GSWR	0-6-0	Drummond design	4	4F
15000-15001	CR	0-4-2ST	Drummond design for Killin Branch	-	-	17800-17804	CR	2-6-0	McIntosh 34 Class	3	3F
15010-15012	HR	4-4-0T	Jones design	-	-						
15013-15017	HR	4-4-0T	Dubs and Co. design	-	-	17820-17830	GSWR	2-6-0	Drummond design	4	4F
15020-15031	CR	4-4-0T	Lambie design	1	1P						
15050-15054	HR	0-4-4T	Jones/Drummond design	-	-	17900-17904	CR	4-6-0	McIntosh 918 Class	3	3F
15100-15114	CR	0-4-4T	Drummond design	1	1P						
15115-15124	CR	0-4-4T	McIntosh 19 Class	2	2P	17905-17915	CR	4-6-0	McIntosh 179 Class	3	3F
15125-15146	CR	0-4-4T	McIntosh 92 Class	2	2P						
15147-15158	CR	0-4-4T	McIntosh 'Balerno' Class	1	1P	17916-17930	HR	4-6-0	Jones 'Goods'	4	4F
15159-15240	CR	0-4-4T	McIntosh 439 Class	2	2P						
15241-15244	GSWR	0-4-4T	Stirling design	1	-	17950-17957	HR	4-6-0	Cumming 'Clan Goods'	4	4F
15245-15254	GSWR	0-4-4T	Manson design	1	1P						
15260-15269	CR	0-4-4T	McIntosh 439 Class (built by LMS)	2	2P	17990-17997	CR	0-8-0	McIntosh 600 Class	6	-
15300-15307	HR	0-6-4T	Drummond design	4	4P						
15330-15361	CR	4-6-2T	Pickersgill design	4	4P						
15400-15405	GSWR	4-6-4T	Whitelegg design	5	5P						
16000	CR	0-4-0ST	Barclay design	-	-						
16001-16039	CR	0-4-0ST	Drummond/McIntosh design	-	0F						
16040-16043	GSWR	0-4-0ST		-	-						
16044-16049	GSWR	0-4-0T	Manson design	-	-						
16050-16051	G&PJt	0-4-0ST		-	-						
16080-16085	GSWR	0-4-4T	Manson design	-	-						
16100-16102	CR	0-6-0ST	Drummond design	-	-						
16103-16117	GSWR	0-6-0T	Manson design	-	-						
16118-16119	HR	0-6-0T	Stroudley design	-	-						
16150	CR	0-6-0ST	Brittain design	1	-						
16151-16173	CR	0-6-0T	McIntosh design	2	2F						
16200-16224	CR	0-6-0ST	Drummond design	3	3F						
16225-16229	CR	0-6-0ST	Lambie design	3	3F						
16230-16376	CR	0-6-0T	McIntosh design	3	3F						
16377-16379	GSWR	0-6-0T	Drummond design	2	2F						
16380-16382	HR	0-6-0T		2	2F						
16383	HR	0-6-0T	Stroudley design (as per 16118-9) - wrongly numbered after 16380-2 and the mistake never rectified	-	-						
16400-16427	GSWR	0-6-2T	Drummond design	3	3F						
16500-16505	CR	0-8-0T	McIntosh 492 Class	4	4F						
17000-17020	CR	0-4-2	Brittain design	1	1F						
17021-17075	GSWR	0-4-2	P.Stirling and J.Stirling designs	1	1F						
17100	GSWR	0-6-0	P.Stirling design	-	-						
17101-17102	CR	0-6-0	Ex-Solway Junction Railway engines	-	-						
17103-17111	GSWR	0-6-0	J.Stirling design	1	-						
17112-17184	GSWR	0-6-0	Smellie designs	2	2F						
17185-17202	GSWR	0-6-0	Manson design	2	2F						

Engines Added to Stock, 1923-1947.

D.F.Tee.

Part 1. - Summary of new locomotives, arranged by classes, in order of appearance of first locomotive in each class. Includes post-nationalisation locomotives of LMS design, built 1948-1954.

The individual classes are described in outline only, without any reference to major or important variations within the classes.

See also notes on Page 6 re. LMS classifications and BR numbering.

Jan.1923 4-6-0 Class 5P 6'3" coupled wheels, 4 cylinders, parallel boiler L.&Y. design introduced 1920 - Hughes. 41 engines built 1923-25, Nos. 10434-10474.

The last 20 engines were larger and were originally intended to be built as 4-6-4T's (see March 1924 entry).

Only one engine, No. 10455, survived to receive its B.R. number, 50455.

Feb.1923 0-8-4T Class 7F 4'5½" coupled wheels, 2 inside cylinders, parallel boiler L.N.W.R. design introduced 1923-Beames-tank version of L.N.W.R. G2 0-8-0. 30 engines built 1923-24, Nos. 7930-7959, B.R. Nos. 47930-47959.

May 1923 4-4-2T Class 3P 6'6" coupled wheels, 2 outside cylinders, parallel boiler. L.T.S.R. 1909 design modified by Midland Railway. 35 engines built 1923-30, Nos. 2110-2134, 2151-2160 B.R. Nos. 41928-41952, 41969-41978.

1923 0-6-2T Class 3F 5'0" coupled wheels, 2 inside cylinders, parallel boiler. N.S.R. 1913 design modified. 4 engines built 1923, Nos. 2270-2273. None acquired by B.R.

Feb.1924 4-4-0 Class 4P 6'9" coupled wheels, 3 cylinders compound, parallel boiler. Midland 1905 design, as superheated 1913, except for reduction of coupled wheel diameter from 7'0½" and minor modifications. 195 engines built 1924-1932, Nos. 900-939, 1045-1199, B.R. Nos. 40900-40939, 41045-41199.

Of the locomotives built during 1923, many were turned out new in pre-grouping or hybrid liveries. In many cases, numbers in the pre-grouping companies' series were carried at first, the L.M.S. numbers being applied later.

March 1924 4-6-4T Class 5P 6'3" coupled wheels, 4 cylinders, parallel boiler. New design - Hughes - based on Hughes L.&Y. 4-6-0 of 1920, but with larger firdex and other modifications. 10 engines built 1924, Nos. 11110-11119. None acquired by B.R.

1924 4-6-0 Class 4P, 6'3" coupled wheels, 2 inside cylinders, parallel boiler L.N.W.R. design of 1911, except for replacement of inside Joy's valve gear by outside Walschaerts gear. 1 engine built 1924, No. 5845. Not acquired by B.R. (Later No. 25845).

July 1924 0-6-0T Class 3F, 4'7" coupled wheels, 2 inside cylinders, parallel boiler. New design - Fowler - but basically Midland Johnson design of 1897 as rebuilt 1919. 415 engines built 1924-31, Nos. 7100-7149, 16400-16764 (Later No. 7260-7309, 7317-7681). A further 7 engines built for Somerset & Dorset Joint Railway 1928-29, came into L.M.S. stock 1930 as Nos. 7150-7156 (Later Nos. 7310-7316). B.R. Nos. 47260-47681.

Nov. 1924 0-6-0 Class 4F, 5'3" coupled wheels, 2 inside cylinders, parallel boiler. Midland 1911 design with a few minor modifications. 575 engines built 1924-41, Nos. 4027-4556, 4562-4406 B.R. Nos. 44027-44556, 44562-44606.

1925 4-6-0 Class 4P, 6'1" coupled wheels, 2 outside cylinders, parallel boiler. Caledonian 1916 design with a few minor modifications. 20 engines built 1925-26, Nos. 14630-14649, B.R. Nos. 54630-54649.

1925 0-4-4T Class 2P, 5'9" coupled wheels, 2 inside cylinders, parallel boiler. Caledonian 1900 design modified. 10 engines built 1925, Nos. 15260-15269, B.R. Nos. 55260-55269.

May 1926 2-6-0 Class 5P4F 5'6" coupled wheels, 2 outside cylinders, parallel boiler. New design - Hughes, modified by Fowler. 245 engines built 1926-32, Nos. 13000-13244 (Later Nos. 2700-2944) B.R. Nos. 42700-42944.

April 1927 2-6-6-2T Garratt (unclassified) 5'3" coupled wheels, 4 outside cylinders, parallel boiler. New design - Fowler/Beyer Peacock & Co. 33 engines built 1927-30, Nos. 4967-4999 (Later Nos. 7967-7999) B.R. Nos. 47967-47999.

July 1927 4-6-0 Class 6P 6'9" coupled wheels, 3 cylinders, parallel boiler. New design - Fowler/North British Loco. Co. "Royal Scot" class. 70 engines built 1927-30, Nos. 6100-6169, B.R. Nos. 46100-46169. All 70 engines rebuilt with taper boilers 1943-55.

Dec.1927 2-6-4T Class 4P 5'9" coupled wheels, 2 outside cylinders, parallel boiler. New design - Fowler - using same boiler as Midland Class 3P 4-4-0. 125 engines built 1927-34, Nos. 2300-2424, B.R. Nos. 42300-42424.

March 1928 4-4-0 Class 2P 6'9" coupled wheels, 2 inside cylinders, parallel boiler. Midland 1912 design, except for reduction of coupled wheel diameter, smaller cylinders and higher working pressure. 138 engines built 1928-32, Nos. 563-700, B.R. Nos. 40563-40700, 3 of the above engines were transferred to the S.D.J.R. in 1928 and returned to L.M.S. stock in 1930 as Nos. 633, 634, 635 - See Part 2.

Dec.1928 0-6-0T Class 2F, 3'11" coupled wheels, 2 outside cylinders, parallel boiler. New design - Fowler - using same boiler as that used for rebuilding Midland Class 1F 0-6-0T. 10 engines built 1928-29, Nos. 11270-11279 (Later Nos. 7100-7109, then 7160-7169), B.R. Nos. 47160-47169.

March 1929 0-8-0 Class 7F 4'8½" coupled wheels, 2 inside cylinders, parallel boiler. New design - Fowler - based on L.N.W.R. 0-8-0. 175 engines built 1929-32, Nos. 9500-9674, B.R. Nos. 49500-49674.

<u>March 1930</u>	2-6-2T Class 3P 5'3" coupled wheels, 2 outside cylinders, parallel boiler. New design - Fowler - using superheated version of Belpaire boiler fitted to M.R. 2-40 and 2F 0-6-0. 70 engines built 1930-32, Nos. 15500-15569 (Later Nos. 1-70) B.R. Nos. 40001-40070.	<u>July 1933</u>	4-6-2 Class 7P 6'6" coupled wheels, 4 cylinders, taper boiler. New design - Stanier "Princess Koyal" class. 12 engines built 1933-35, Nos. 6200, 6201, 6203-6212. B.R. Nos. 46200, 46201, 46203-12.	<u>June 1935 (Continued)</u>	Some of the above engines were transferred to the War Department after varying periods with L.M.S. numbers, whilst No. 8264-8285 were delivered new to the L.M.S. in 1942 with W.D. numbers, and were given their L.M.S. numbers in 1943. A further 68 engines built 1944-46 as L.N.E.R. stock with L.N.E.R. numbers, but transferred on loan to L.M.S. 1947, and given L.M.S. numbers 8705-8772. In addition to the above, 133 engines were built for the War Department in 1940-42, without ever receiving L.M.S. numbers. Of these 133 engines, several returned to the U.K. after the war and were given B.R. numbers in the 8F series. A total of 852 engines in all. B.R. numbers in series 48000-48775.
<u>June 1930</u>	0-4-0T Sentinel (unclassified), 2'6" wheels, 2 cylinders, vertical boiler. Sentinel Waggon Works Ltd. design - 100 H.P. chain driven. 4 engines built 1930, Nos. 7160-7163 (Later Nos. 7180-7183). B.R. Nos. 47180-47183.	<u>Oct.1933</u>	2-6-0 Class 4F 5'6" coupled wheels, 2 outside cylinders, taper boiler. New design - Stanier. 40 engines built 1933-34, Nos. 13245-13284 (later Nos. 2945-2984). B.R. Nos. 42945-42984.		
<u>Nov.1930</u>	4-6-0 Class 5XP. 6'9" coupled wheels, 3 cylinders, parallel boiler. New design - Fowler "Patriot" class. 2 engines rebuilt 1930 from L.N.W.R. Claughton class 4-6-0s, 40 engines nominally rebuilt from Claughton 4-6-0s, 1932-33. The above 42 engines carried numbers (in 5900-6029 series) of Claughton from which they were rebuilt (Later Nos. 5500-5541), B.R. 45500-41, 10 new engines built 1934, Nos. 6030-6039 (later Nos. 5542-51), B.R. 45542-51. 18 of the above engines rebuilt with taper boilers 1946-49.	<u>April 1934</u>	2-6-4T Class 4P 5'9" coupled wheels, 3 cylinders, taper boiler. New design - Stanier. 37 engines built 1934, Nos. 2500-2536, B.R. Nos. 42500-42536.		
<u>Jan.1932</u>	0-4-0T Sentinel (unclassified), 2 cylinders, vertical boiler. Sentinel Waggon Works Ltd. design - chain driven, smaller than 1930 loco. 1 engine built 1932, No. 7164 (Later No. 7184) B.R. 47184.	<u>May 1934</u>	4-6-0 Class 5XP 6'9" coupled wheels, 3 cylinders, taper boiler. New design - Stanier "Silver Jubilee" class. 191 engines built 1934-36, Nos. 5552-5742, B.R. Nos. 45552-45742, 2 of the above engines were rebuilt with larger boilers in 1942.	<u>July 1935</u>	4-6-2 Class 7P 6'6" coupled wheels, turbine driven, taper boiler. New design - Stanier. 1 engine built 1935, No. 6202, B.R. No. 46202, Rebuilt as orthodox 4 cylinder locomotive 1952.
<u>Nov. 1932</u>	0-4-0ST Class OF 3'10" coupled wheels, 2 outside cylinders, parallel boiler. New design - Lemon. 5 engines built 1932, Nos. 1540-1544 (Later Nos. 7000-4) B.R. Nos. 47000-4. 5 modified engines built by B.R. 1953-54, Nos. 47005-47009.	<u>Sept.1934</u>	4-6-0 Class 5P5F 6'0" coupled wheels, 2 outside cylinders, taper boiler. New design - Stanier. 742 engines built 1934-47, Nos. 4758-5499, B.R. Nos. 44758-45499. 100 engines built by B.R. 1948-51, Nos. 44658-44757.	<u>Oct.1935</u>	4-6-0 Class 6P 6'9" coupled wheels, 3 cylinders, taper boiler. New design - Stanier - incorporated material from experimental loco. No. 6399 "Fury". 1 engine built 1935, No. 6170, B.R. No. 46170.
<u>Dec.1932</u>	0-4-4T Class 2P 5'7" coupled wheels, 2 inside cylinders, parallel boiler. New design - Lemon - using second-hand Belpaire boilers from Midland 2-4-0's & 2FO-6-0's. 10 engines built 1932-33, Nos. 6400-6409 (later Nos. 1900-1909). B.R. Nos. 41900-41909.	<u>Nov.1934</u>	0-4-0T "Sentinel-Doble" (unclassified), 2'6" wheels, 4 cylinders, vertical boiler. Sentinel Waggon Works Ltd. design - 200 H.P., oil-fired. 1 engine built 1934, No. 7192. Not acquired by B.R. (Withdrawn 1943).	<u>Dec.1935</u>	2-6-4T Class 4P 5'9" coupled wheels, 2 outside cylinders, taper boiler. New design - Stanier - 2 cylinder version of 1934 design (Nos. 2500-36). 206 engines built 1935-43; Nos. 2425-2494, 2537-2672, B.R. Nos. 42425-42494, 42537-42672.
		<u>Feb.1935</u>	2-6-2T Class 3P 5'3" coupled wheels, 2 outside cylinders, taper boiler. New design - Stanier. 139 engines built 1935-38, Nos. 71-209, B.R. Nos. 40071-40209, 6 of the above engines rebuilt with large boilers 1940-56.	<u>June 1937</u>	4-6-2 Class 7P 6'9" coupled wheels, 4 cylinders, taper boiler. New design - Stanier "Princess Coronation" class. 38 engines built 1937-47, Nos. 6220-6256, B.R. Nos. 46220-46256. 1 engine built by B.R. 1948, No. 46257. (24 of the above engines were originally streamlined, but had their streamlined casings removed in 1946-49).
		<u>June 1935</u>	2-8-0 Class 8F 4'8½" coupled wheels, 2 outside cylinders, taper boiler. New design - Stanier. 651 engines built 1935-45, Nos. 8000-8479, 8490-8495, 8500-8559, 8600-8704.		

March 1945 2-6-4T Class 4P 5'9" coupled wheels, 2 outside cylinders, taper boiler. Fairburn modification of 1935 design with shorter wheelbase and reduced weight. 130 engines built 1945-47, Nos. 2187-2189, 2200-2299, 2673-2699, B.R. Nos. 42187-42189, 42200-99, 42673-99. 147 engines built by B.R. 1948, Nos. 42050-42186, 42190-42199.

Dec.1946 2-6-0 Class 2F 5'0" coupled wheels, 2 outside cylinders, taper boiler. New design - H.G. Ivatt. 20 engines built 1946-47, Nos. 6400-6419, B.R. Nos. 46400-46419. 108 engines built by B.R. 1948-53, Nos. 46420-46527.

Dec.1946 2-6-2T Class 2P 5'0" coupled wheels, 2 outside cylinders, taper boiler. New design - H.G. Ivatt - tank version of 2F 2-6-0 above. 10 engines built 1946, Nos. 1200-1209, B.R. Nos. 41200-41209. 120 engines built by B.R. 1948-52 Nos. 41210-41329.

Dec.1947 2-6-0 Class 4F 5'3" coupled wheels, 2 outside cylinders, taper boiler. New design - H.G. Ivatt. 3 engines built 1947, Nos. 3000-3002, B.R. Nos. 43000-43002. 159 engines built by B.R. 1948-52, Nos. 43003-43161.

- NOTES
- Classes introduced prior to 1928 are shown with the classifications adopted in 1928.
 - Classes introduced from 1928 onwards are shown with their original classifications.
 - Where B.R. numbers are shown, it should be understood that not all engines received their allotted numbers, and that a number of engines did not even survive to be taken over by B.R.
 - All engines built by B.R. are shown with their B.R. numbers, although several engines built early in 1948 were turned out with four-figure numbers, usually with the prefix 'M' and were later renumbered in the 40000 series. For example, the first eight 4F 2-6-0s built in 1948 were

turned out as M3003 to M3010 inclusive, followed by 43011 upwards. M3003 to M3010 later became 43003 to 43010.

PART 2

Locomotives acquired by other than new construction

1927-28 20 2-8-0s of Great Central design ex-Ministry of Munitions L.M.S. Nos. 9646-9665, following immediately the numbers of 30 engines of the same type acquired from the L.N.W.R. at grouping in 1923.

The life of these engines was short, but six of the series 9646-9665 survived to be renumbered 9477-9482 in 1931.

It is known that 50 of these engines were purchased by the LMS, of which 4 were sold, and 25 cut up, but 20 only were put into traffic as above.

1930 80 locomotives taken over from Somerset & Dorset Joint Railway as under:-

<u>Wheel arrangement</u>	<u>No. of engines</u>	<u>L.M.S. Numbers</u>
4-4-0	14	300-303, 320-326, 633-635*
0-6-0	26	2880-2890, 3194/8, 3201/4, 3211/6/8/23/48/60, 4557-4561
2-8-0	11	9670-9680 (Later L.M.S. Nos. 13800-13810)
0-4-4T	12	1200-1207, 1230-1232, 1305
0-6-0T	15	1500-1507, 7150-7156† (Later L.M.S. Nos. 7310-7316)
0-4-0T	2	7190, 7191
	<u>TOTAL</u>	<u>80</u>

NOTE: Many of the above engines ex-S.D.J.R. were given numbers which had become vacant owing to withdrawal of ex-Midland engines, but a few Midland engines were renumbered to make way for the S.D.J.R. acquisitions.

* See page 3 for further details of Nos. 633-635.

† See page 2 for further details of Nos. 7150-7156.

LMS STANDARD STEAM LOCOMOTIVE CLASSES - PRE-1934 NUMBER ALLOCATIONS

LMS STANDARD STEAM LOCOMOTIVE CLASSES - FINAL NUMBER ALLOCATIONS
(INCLUDING BR BUILT LOCOMOTIVES TO LMS STANDARD DESIGN)

<u>RUNNING NUMBERS</u>	<u>WHEEL ARRANGEMENT</u>	<u>LOCOMOTIVE CLASS</u>	<u>TOTAL IN SERVICE</u>	<u>LMS RUNNING NUMBERS</u>	<u>WHEEL ARRANGEMENT</u>	<u>LOCOMOTIVE CLASS</u>	<u>TOTAL BUILT</u>
563-700	4-4-0	Fowler Class 2P	138				
900-939) 1045-1199)	4-4-0 ++	Fowler Class 4P Compound	195				
1540-1544	0-4- OST	'Stanier' Class OF	5				
2300-2424	2-6-4T	Fowler Class 4P	125	1-70	2-6-2T	Fowler Class 3P	70
4027-4556	0-6-0	Fowler Class 4F	530	71-209	2-6-2T	Stanier Class 3P	139
4967-4999	2-6-0+0-6-2T@	Garratt Class	33	563-700	4-4-0	Fowler Class 2P	138
Various:				900-939) 1045-1199)	4-4-0 ++	Fowler Class 4P Compound	195
5901-6026 *	4-6-0 ++	Fowler 'Patriot' Class 5XP	42	1200-1329 *	2-6-2T	Ivatt Class 2P	130
6100-6169	4-6-0 ++	Fowler 'Royal Scot' Class 6P	70	1900-1909	0-4-4T	'Stanier' Class 2P (renumbered in 1946)	10
6200-6201	4-6-2 @	Stanier 'Princess Royal' Class	2	2050-2299 *	2-6-4T	Fairburn Class 4P	250
6400-6409	0-4-4T	'Stanier' Class 2P	10	2300-2424	2-6-4T	Fowler Class 4P	125
7100-7156	0-6-OT	Fowler Class 3F	57	2425-2494	2-6-4T	Stanier Class 4P	70
7160-7164	0-4-OT	Sentinel type engines (two variants)		2500-2536	2-6-4T ++	Stanier Class 4P	37
9500-9674	0-8-0	Fowler Class 7F	175	2537-2672	2-6-4T	Stanier Class 4P	136
11270-11279	0-6-OT	Fowler Class 2F	10	2673-2699	2-6-4T	Fairburn Class 4P	27
13000-13244	2-6-0	Hughes/Fowler Class 5P/4F	245	2700-2944	2-6-0	Hughes/Fowler Class 5F	245
13245-13284	2-6-0	Stanier Class 5P/4F	40	2945-2984	2-6-0	Stanier Class 5F	40
15500-15569	2-6-2T	Fowler Class 3P	70	3000-3161 *	2-6-0	Ivatt Class 4F	162
16400-16764	0-6-OT	Fowler Class 3F	365	4027-4556) 4562-4606)	0-6-0	Fowler Class 4F	575
		TOTAL	<u>2,117</u>	4658-5499 *	4-6-0	Stanier Class 5	842
				5500-5551 5552-5742	4-6-0 ++ 4-6-0 ++	Fowler 'Patriot' Class 5XP) including rebuilds Stanier 'Jubilee' Class 5XP) to Class 6P	52 191
++	three cylinder locomotives			6100-6169	4-6-0 ++	Fowler 'Royal Scot' Class 6P - including rebuilds with taper boiler	70
@	four cylinder locomotives			6170	4-6-0 ++	Stanier 'Royal Scot (Taper Boiler)' Class 6P	1
*	These engines took the running numbers of the ex-LNWR 'Claughton' Class 4-6-0s which they had, nominally, replaced. The complete details are contained in the class article.			6200-6201	4-6-2 @	Stanier 'Princess Royal' Class 7P	2
				6202	4-6-2	Stanier Experimental Turbine Locomotive Class 7P	1
				6203-6212	4-6-2 @	Modified Stanier 'Princess Royal' Class 7P	10

Note: Those classes which continued building after Nationalisation are marked thus *. Most of the engines which entered service after 1947 did so with their full BR 4xxxx numbers but for consistency, this table merely shows the LMS number series.

<u>LMS RUNNING NUMBERS</u>	<u>WHEEL ARRANGEMENT</u>	<u>LOCOMOTIVE CLASS</u>	<u>TOTAL BUILT</u>
6220-6257 *	4-6-2 @	Stanier 'Princess Coronation' Class 7P	38
6400-6527 *	2-6-0	Ivatt Class 2P	128
7000-7009 *	0-4-OST	'Stanier' Class OF	10
7160-7169	0-6-OT	Fowler Class 2F (ran as 7100-9 from 1934-9)	10
7180-7184	0-4-OT	Sentinel locomotives (renumbered in 1939)	5
7260-7681	0-6-OT	Fowler Class 3F	422
7967-7999	2-6-0+0-6-2T@	Garratt Class (renumbered in 1938/9)	33
8000-8399	2-8-0	Stanier Class 8F) These engines all	400
8400-8479	2-8-0	Stanier Class 8F (GWR built)) classed as LMS	80
8490-8495	2-8-0	Stanier Class 8F) stock - some later	6
8500-8559	2-8-0	Stanier Class 8F (LNER built)) to WD use	60
8600-8704	2-8-0	Stanier Class 8F (SR built))	105
8705-8729	2-8-0	Stanier Class 8F (SR built)) ex-LNER locomotives	25
8730-8772	2-8-0	Stanier Class 8F (LNER built)) loaned to LMS in	43
		) 1947	
	2-8-0	Stanier Class 8F - WD locomotives never allocated	133
		LMS series numbers although	
		some returned to BR after	
		1947 and were given vacant	
		48xxx numbers	
9500-9674	0-8-0	Fowler Class 7F	175
		TOTAL	<u>5,191</u>

Note: Many of the locomotives concerned in this summary did not survive for long enough after 1947 to receive their allotted BR numbers.

<u>FINAL LMS NUMBER(S)</u>	<u>WHEEL ARRANGEMENT</u>	<u>LOCOMOTIVE CLASS</u>	<u>BR NUMBER/SERIES</u>
25648/73) 25752/87)	4-6-0	Bowen-Cooke ex-LNWR 'Prince of Wales' Class (none received BR numbers)	58000-58003
25297	4-4-0	Whale ex-LNWR 'Precursor' Class - did not receive BR number	58010
25350/73	4-4-0	Bowen-Cooke ex-LNWR 'George the Fifth' Class (neither received its BR number)	58011-58012
20155/85) 20216)	2-4-0	Johnson ex-MR design - one only (20155) renumbered by BR	58020-58022
Various:))			
1239-1430)	0-4-4T	Johnson ex-MR design	58030-58091
26428	2-4-OT	Webb ex-LNWR design	58092
22290	0-10-0	Fowler ex-MR Banking Engine	58100
22630/846) 22853/63)	0-6-0	Kirtley ex-MR design - one only (22630) renumbered by BR	58110-58113
Various:))			
22900-23018)	0-6-0	Johnson ex-MR Class 2F	58114-58187
Various:))			
3023-3764)	0-6-0	Johnson ex-MR Class 2F	58188-58310
Various:))			
28088-28313)	0-6-0	Webb ex-LNWR 'Coal' Engines	58320-58361
Various:))			
28318-28622)	0-6-0	Webb ex-LNWR 'Cauliflowers'	58362-58430
Various:))			
27505-27532)	0-6-OT	Park ex-NLR design	58850-58863
27217	0-4-2ST	ex-NLR Crane Engine	58865
27480	0-6-OST	Webb ex-LNWR 'square' saddle tank	58870 (never carried)

++ three cylinder locomotives)
@ four cylinder locomotives)
) Remainder were two cylinder machines.

Footnote: Stanier Class 8F 2-8-0 A total of 852 locomotives were built of which 719 were either owned by the LMS or carried LMS running numbers at sometime.

<u>FINAL LMS NUMBER(S)</u>	<u>WHEEL ARRANGEMENT</u>	<u>LOCOMOTIVE CLASS</u>	<u>BR NUMBER/ SERIES</u>
Various:))			
27553-27681)	0-6-2T	Webb ex-LNWR 'Coal' tank	58880-58898
Various:))			
7692-7840)	0-6-2T	Webb ex-LNWR 'Coal' tank	58899-58937

† The ex-MR Class 3F 0-6-0s in this same number series retained their LMS numbers (plus 40000) except for LMS 3137 which became BR 43750 to clear the 431xx series for new construction of Ivatt Class 4F 2-6-0s. The BR renumbering of the ex-MR Class 2F 0-6-0s was the first time since 1907 that these locomotives had been numbered separately from the Class 3Fs.

Engine Sheds, 1925.

MIDLAND DIVISION

Main Depot	Shed No.	Sub-Depots
Derby	1	
Carlisle	33	
Skipton	30	Lancaster, Hellifield, Ingleton.
Leeds	28	Manningham, Keighley, Ilkley, Normanton and B., Stourton.
York & B	27	
Sheffield & A	25	Millhouses, Canklow, Masboro'.
Hasland	23	Staveley, Sheepbridge, Westhouses
Liverpool	19	Walton, Widnes.
Belle Vue	21	Trafford Park, Heaton Mersey, Northwich.
Buxton & A	20	Rowsley.
Nottingham	18	Mansfield, Kirkby, Lincoln, Southwell.
Toton	17	
Burton-on-Trent & A	2	
Saltley	3	Bournville, Redditch, Stratford-on-Avon, Blisworth.
Worcester	4	Bromsgrove
Brecon	5	
Upper Bank	6	Gurnos.
Bristol	8	Glo'ster, Evesham, Tewkesb'y, Bath, Dursley, Ashchurch, Thornbury.
Peterboro' & A	9	Bourne.
Leicester	10	Coalville, Stockingford, Wigston.
Wellingboro'	13	Kettering, Cambridge.
Bedford & A	14	
Kentish Town	16	Cricklewood, St. Albans.
Plaistow	-	Upminster, Tilbury, Shoeburyness.

Main Depot	Shed No.	Sub-Depots
Northampton	5	
N. & Colwick	7	
Nuneaton	4	Coalville, Leicester, Loughboro', Overseal.
Walsall & M.	9	Dudley, Hednesford.
Bescot	6	
Aston	10	Monument Lane.
Bushbury	13	
Crewe	15	Whitchurch.
Stafford	14	
Shrewsbury	30	Ludlow, Coalport, Craven Arms, Clee Hill, Builth Road, Knighton.
Longsight	16	Stockport, Lees, Altrincham.
Springs Branch	25	
Sutton Oak	24	
Warrington	23	Arpley, Over & Wharton.
Edge Hill	26	
Speke Junction	35	Widnes.
Preston	27	Lancaster, Garstang.
Carnforth & M.		
Carlisle	29	Penrith, Maryport.
Tebay	28	Oxenholme, Ingleton.
Abergavenny	31	Hereford & M., Tredegar, Bl'navon.
Swansea	33	Carmarthen, Llandovery.
Patricroft	34	Fbdder Lane.
Farnley Junction	17	
Huddersfield	20	
Llandudno Junction	38	Blaenau Festiniog, Denbigh, Rhyl Corwen.
Bangor	21	Carnarvon, Amlwch.
Holyhead	22	
Chester	19	
Birkenhead	18	Hooton, Ellesmere Port.
Birkenhead Docks	-	
Mold Junction	37	
Stoke, N.S.	-	Macclesfield, Alsager, Leek Brook, Market Drayton, Caldon Quarry, Ashborne, Uttoxeter, Hulme End.
Barrow (Furness)	-	Moor Row, Lakeside, Coniston.
Workington	32	
Greenore	-	
Warwick, Coventry, Market Harboro', Stamford, Seaton.		

WESTERN 'A' DIVISION

Devons Road	-	
Willesden	2	Watford
Bletchley	3	Leighton, Cambridge, Banbury, Oxford, Aylesbury, Newport Pagnell.
Camden	1	
Rugby	8	Warwick, Coventry, Market Harboro', Stamford, Seaton.

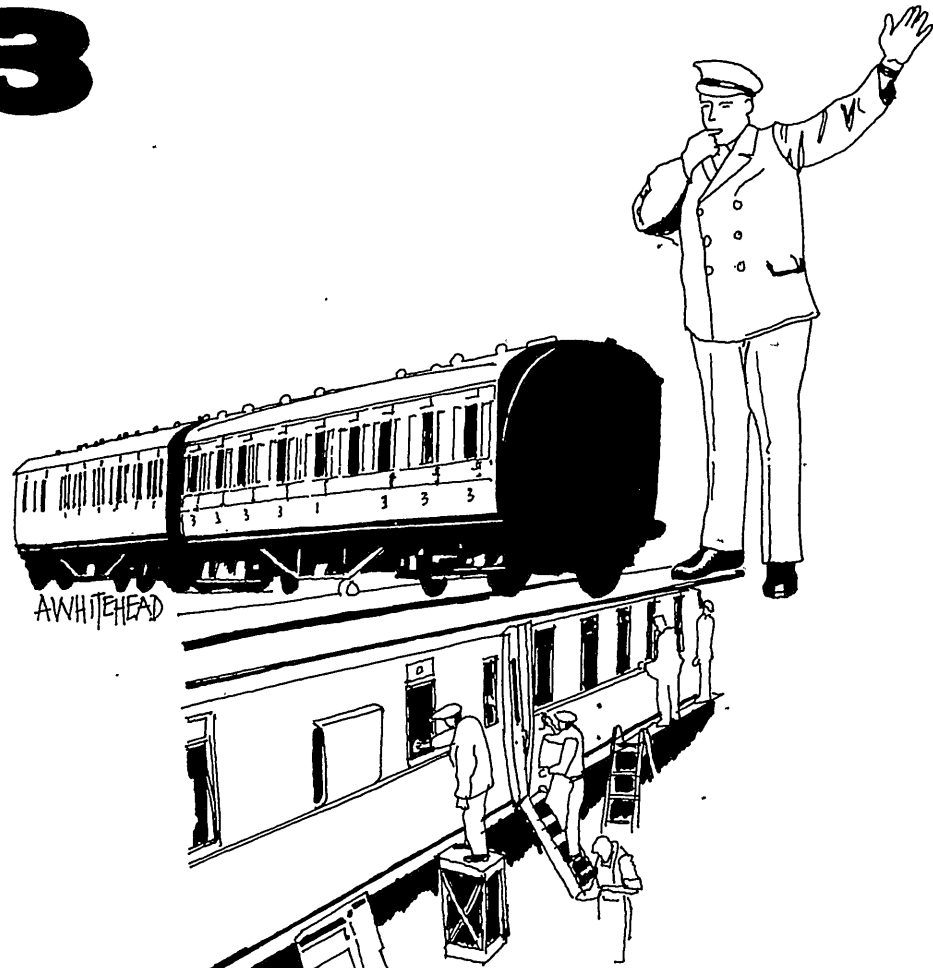
WESTERN 'B' DIVISION

<u>Main Depot</u>	<u>Shed No.</u>	<u>Sub-Depots</u>	<u>Main Depot</u>	<u>Shed No.</u>	<u>Sub-Depots</u>
Newton Heath	1		Inverness		Dingwall, Tain, Dornoch, Fort George, Fortrose.
Agecroft	13		Wick		Lybster, Thurso.
Low Moor	2		Helmsdale		
Sowerby Bridge	3		Kyle of Lochalsh		
Mirfield	5	Barnsley, Hull.	Forres		Keith, Burghead, Fochabers.
Wakefield	6	Knottingley, Doncaster.	Aviemore		Kingussie.
Goole	10		Perth (North)		Aberfeldy.
Bolton	14		Blairatholl		
Wigan	16		Polmadie		Ardrossan (North), Irvine, Govan, Kilbirnie, Paisley (St. James), Baillieston.
Horwich	15		St. Rollox		
Bank Hall	18		Stirling		Callender, Denny, Killin.
Southport	17		Ardrossan		Fairlie Pier.
Aintree	19		Newton on Ayr		Dallmellington.
Ormskirk	29		Corkerhill		
Bury	20		Dumfries		Kirkcudbright.
Bacup	21		Girvan		
Accrington	22		Greenock (Princes Peir)		
Rose Grove	23		Hurlford		Beith.
Colne	24		Troon Harbour		
Lower Darwen	25		Muirkirk		
Hellifield	26		St. Enoch		
Blackpool C.	32	Blackpool T.R.31.	Stranraer		Newton Stewart, Millisle.
Fleetwood	30				
Lostock Hall	27				

NORTHERN DIVISION

Aberdeen		
Beattock		Lockerbie, Leadhills.
Kingmoor		Kirtlebridge.
Carstairs		
Dawsholm		Airdrie, Dumbarton, Yoker.
Dundee		Blairgowrie.
Edinburgh		
Forfar		Alyth, Arbroath, Brechin, Montrose.
Greenock (Ladyburn)		Wemyss Bay.
Motherwell		Grangemouth, Greenhill, Hamilton, Strathaven.
Oban		Ballachulish.
Perth (South)		Balquhider, Crieff, Methven.

3



PASSENGER STOCK

The passenger carrying vehicles bequeathed to the LMS at the grouping of 1923 must surely represent one of the most heterogeneous collections of coaches ever to be possessed by one railway company. They varied in kind from the opulence of the long distance coaches of the larger companies to the somewhat frugal accommodation provided on local trains in many parts of the far-flung system - not necessarily in those areas most removed from the centre of activities either! Tempting though it would be to reminisce in detail about these many and varied products of a by-gone age, it would be impossible to do all the designs full justice and, therefore, no such attempt has been made. Aside from which, much ground has already been covered by such authorities as C. Hamilton Ellis and G. M. Kichenside.

Of the great number of coaches taken over by the LMS in 1923, the list below will give some idea of the numbers of various types still in use in 1933. LMS Standard types have been included in the Table as a comparison.

TYPE	LMS STD	LNW	MR	LYR	CR	GSWR	HR	OTHER	TOTAL	LMS STD POST 1933
Restaurant Car, 1st	28	19	17	4	1				69	16
Restaurant Car, 3rd	20	19	20						59	28
Restaurant Car, Compo	18	45	1		22 ^①	3			89	13
Buffet Car	1								1	4
Tea Car		14							14	
Kitchen Only Car	75	3							78	32
Sleeping Car, 1st	52	49							101	51
Sleeping Car, 3rd	100								100	25
Sleeping Car, Compo	12	10							22	25
Corridor, 1st	23	44	7	10	4	7			95	106
Corridor, 3rd	372	802	186	75	43	24	15		1,517	1,380
Corridor, 3rd (Push-Pull)		44		18					62	12 ^②
Corridor, Compo	364	427	134	25	23	8	16	10 ^③	1,007	991
Corridor Brake, 1st	46	12	41	2					101	32
Corridor Brake, 3rd	317	404	101	52	43	5	2		924	1,508
Corridor Brake, Compo	186	258	103	39	39	2	2		629	91
Vestibule, 1st	90	3	2	39					134	106
Vestibule, 3rd	1,300 ^④	3	73 ^⑤	69					1,445	916
Vestibule, Compo	29		57 ^⑥	8					42	25
Vestibule Brake, 3rd	90		2	27					119	167
Total (Corridor)	3,123	2,156	692	368	175	49	35	10	6,608	5,516
N/C, 1st	110	132	110	50	47	49		3 ^⑧	501	22
N/C, 3rd	980	330	423	99	215	244		78	2,369	604
N/C, 3rd (Push-Pull)		52	2	3				1 ^⑨	58	7 ^⑮
N/C, Compo	595	313	156	364	74	39		16	1,557	197 ^⑮
N/C, Compo (Push-Pull)		37	4					1 ^⑩	42	44 ^⑮
N/C Lavatory, 1st	30	22	11		2			3 ^⑪	68	-
N/C Lavatory, 3rd		37	43	14	35		34	23	186	-
N/C Lavatory, Compo	196	230	198	104	23	1	28	29	809	4
N/C Brake, 3rd	700 ^⑫	624	465	784	159	83		65	2,880	559
N/C Brake, 3rd (Push-Pull)		17	5					4 ^⑬	26	74 ^⑮
N/C Brake, Compo		4	31	13	18	5		11	82	-
N/C Brake, Compo (Push-Pull)			1	3					4	-
N/C Lav Brake, 3rd	273	63	99		23		4	3 ^⑭	465	-
N/C Lav Brake, Compo		62	101		48			11	222	-
Total (Non-Corridor)	2,884	1,923	1,649	1,434	644	421	66	248	9,269	1,511
Total (All Bogie Coaches)	6,007	4,079	2,341	1,802	819	470	101	258	15,877	7,027

LMS bogie passenger coaches by type as at 1933.

notes.

- ① Ex-Pullman Cars.
- ② Includes conversions from open vestibule stock.
- ③ Ex-FR.
- ④ Includes 25 coaches later down-graded to 3rd Class.
- ⑤ Plus 25 ex-firsts (see note 4).
- ⑥ Including 30 built after 1922 to MR diagram.
- ⑦ All built after 1922 but to MR diagram.
- ⑧ Ex-NSR.
- ⑨ Ex-S & D JR

- ⑩ Ex-S & D JR
- ⑪ Ex-NSR
- ⑫ Includes 7 coaches built as Brake 2nd for North London Line.
- ⑬ Ex-S & D JR
- ⑭ Ex-NSR
- ⑮ Push-Pull variants are listed as post-1933 since most of them appeared at this time. Many were pre-1933 coaches converted for push-pull. These push-pull conversions are additional to the totals in Column 1.

LMS passenger coaches - Residual 4 & 6 wheeled vehicles in 1933.

TYPE	LNW	MR	LYR	NSR	FR	CR	GSWR	HR	TOTAL
N/C, 1st	46	6	1			7			60
N/C, 3rd	382	130	14	42	69 ^①	23	183	45	888 ^②
N/C, Compo	96	15	2	14	5		1	4	137
N/C Lav, 1st				1				1	2
N/C Lav, 3rd	7	8			1				16
N/C Lav, Compo	3	6		7	1		.3		20
N/C Brake, 3rd	214	44	4	30	8	10	21		331
N/C Brake, Compo	5				2		2		9
N/C Lav Brake, 3rd				2					2
N/C Lav Brake, Compo	8								8
TOTAL	761	209	21	96	86	40	210	50	1,473

notes.

- ① Including 3 ex-MGR.
- ② Including c.32 x 2nd Class examples.

General Note: These totals are believed accurate but surviving records do not guarantee absolute certainty. They represent the 2nd LMS series numbers allocated to 4 and 6 wheel stock. Many coaches were probably scrapped before receiving these second LMS numbers.

Design.

From almost the very inception of the LMS Railway, the design and building of coaches followed a very standardised pattern. There were very many types of coaches built to suit the various services and needs but, in general, the progression of design features was a logical one and is not unduly difficult to analyse. Three quite distinct periods of design can be recognised, the last of which continued until after nationalisation.

For a number of reasons it is best to consider the coaches around these three periods, and the main features are noted below summarising the main stages of development of gangwayed stock, remembering that non-corridor stock tended to follow similar phases of development.

- Period I Pre-group traditions still quite strong, generally with MR ideas predominating. Coaches were mostly fully wood panelled and beaded although a few were 'all steel'. Open coaches were of 'two window' style as were the compartment sides of later corridor coaches. The design period culminated with the high waisted single window stock of 1928/9. Coaches built during this period were sometimes referred to as 'Fowler' vehicles.
- Period II Single window low waisted designs, initially retaining the exterior wood panelling and beading. The style ended with the gradual change to the exclusive use of exterior steel panels although still with 'square' windows. The coaches were often referred to as 'Lemon' vehicles.
- Period III Wooden framed bodies but now with totally flush steel panels, rounded window corners and ribbed roof style. Large windows had sliding ventilators and the styling remained virtually unchanged until after 1947. Often referred to as 'Stanier' stock, the style culminated in the short lived 'Porthole' variation which in its final form helped to pave the way for the BR standard stock.

The standard LMS underframe was built in a variety of lengths but the vast bulk of designs were made for the 57 ft. length which was the final LNWR standard and was also, latterly, a length which the Caledonian and Midland Railways had used. Regardless of length, all LMS underframes were substantially identical and shared common truss rod dimensions. Longer chassis were adopted for more specialised stock and the following list summarises the principal utilisation of the various lengths, other than the 57 ft. standard variety:-

- 69 ft. Period III 12 wheel Sleeping Cars.
- 68 ft. All Kitchen/Dining Cars and pre-Stanier 12 wheel sleeping cars.
- 65 ft. Period III vestibule first dining coaches and third class sleeping cars.
- 62 ft. Later versions of Period III corridor brake composites.
- 60 ft. Period I third class sleeping cars, Period II vestibule third class dining coaches, most designs of corridor composites and brake composites (except for the earlier Period I all-door designs) and many TPO vehicles. This was the most common alternative length for gangwayed coaches after the 57 ft. variety.
- 59 ft. Some electric driving motor coaches.
- 58 ft. Some electric multiple unit stock.

- 54 ft. Non-corridor stock for the LT & S and Cathcart Circle services plus a few batches for general service.
- 51 ft. One batch only of non-corridor composites for the Cathcart Circle services.
- 50 ft. Most passenger full brakes and kitchen cars.

The LMS also built some articulated coaches and for the gangwayed vehicles, Stanier designed a centrally trussed lattice type underframe. This was first tried out as far as is known on corridor third brake No. 5844. The 1937 general service coaches were articulated by a single pivot 'male and female' joint, but for the experimental diesel articulated train and the 1939 'Coronation Scot' stock, the 'LMS type' of articulation was utilised. This basically made use of a double pivot and enabled a slightly longer distance between bogie centres to be achieved without the throw-over on curves exceeding the loading gauge although still within the maximum distance between wheels permitted by points locking bars. Three basic kinds of articulated locomotive-hauled stock were built. In 1937 there were introduced some gangwayed open articulated pairs in the Central Division - mainly for excursion use - and at the same time there was built a batch of three coach units of non-corridor stock. These were articulated on the same principle but had conventionally trussed underframes. Finally there were the 1939 'Coronation Scot' coaches which had centrally trussed frames like the 1937 vestibule pairs but had the later type of articulation.

Livery

Most changes in livery approximately coincided with changes in coach styles and although there were exceptions to this pattern, it is useful to give the following generalised summary of the livery of new coaches. Reported pre-grouping coaches followed the same principles as far as possible.

- Period I Full livery, red ends, grey and black roofs, original insignia placing, small scroll type running numbers.
- Period II Full livery, red ends, grey and black roofs, final insignia placing, 'stretched' scroll type running numbers.
- Period III (1933-4) Full livery, red ends, metallic roof finish, final insignia placing, unshaded sans-serif running numbers.
- Period III (1934-9) Simple livery, red ends (1934-6), black ends (late 1936 onwards), metallic roof finish, final insignia placing, shaded sans-serif numbers. Insignia shade changed from gold leaf to chrome yellow.
- Period III (1940-9) Simple livery (with straw lining from 1946 onwards), black ends, grey roof finish, final insignia placing, small scroll numbers with flat topped '3', flat topped '3' on outside doors, figure '1' on first class windows.

Wartime repainting was unlined and after Nationalisation, the LMS lettering and circular emblem were omitted but an 'M' prefix was often added to the running number, often in matching style.

Standard Codes.

The BR system of coding coach types is based on the old LNER system and following parts of it are relevant to LMS standard coaches, the LMS codes being given for comparison:-

Dining and Kitchen Vehicles	BR Code	LMS Code
First Class Kitchen/Dining car	RF	1st RKC
Composite Kitchen/Dining car	RC	Compo RKC

Third Class Kitchen/Dining car	RT	3rd RKC
Unclassified Kitchen/Dining car	RU	Common RKC
Kitchen/Buffer car	RB or RKB	BRC
Kitchen only car	RK	KC
First Class vestibule dining coach	RFO	QL (Dining)
Composite vestibule dining coach	RCO	VC (Dining)
Third Class vestibule dining coach	RTO	QF (Dining)
Unclassified vestibule dining coach	RUO	-

Sleeping Cars

First Class	SLF	SC
Composite	SLC	CSC
Third Class	SLT	SCT
Third Class (twin berth)	SLT (T)	-

Vestibule Stock

Vestibule First Class	FO	QL
Vestibule Composite	CO	VC
Vestibule Third Class	TO	QF
Vestibule Third Class Brake	BTO	VH
Semi-open First Class (Corridor/Vestibule)	Semi-FO or Semi-RFO	CQL
Semi-open Third Class (Corridor/Vestibule)	Semi-TO or Semi-TRO	-

Corridor Stock

First Class	FK	CL
First Class Brake	BFK	E
Composite	CK	CBC
Composite Brake	BCK	CBB
Third Class	TK	CF
Third Class Brake	BTK	CH

Non-Corridor Stock

First Class	F	L
First Class (with lavatory)	FL	LM
Composite	C	BC
Composite (with lavatory)	CL	L&C
Third Class	T	F
Third Class Brake	BT	H
Third Class Brake (with lavatory)	BTL	LH

Other Coaching Stock

Passenger full brake with gangway	BG	CBR
6 wheel passenger full brake with gangway	BGZ	CR
6 wheel passenger full brake without gangway	BZ	R
Post Office Sorting Van	POS	POR
Post Office Tender (Stowage Van)	POT	PPR

Note: 1. Articulated stock is prefaced by the word 'Twin' or 'Triple' in the BR system.

2. Codes exist for multiple unit stock but have not been employed in this book.

The 1932-3 Renumbering Scheme.

The 1932/3 renumbering scheme grouped all coaching stock (pre- and post-grouping) into systematic number blocks according to coach type. Within the pre-group allocations, the numbering order was generally as follows: LNWR (which carried the lowest numbers); MR; LYR; FR; CR; GSWR; HR (which carried the highest numbers). Generally speaking the LMS standard coaches were numbered consecutively upwards from the start of the block and the pre-group coaches were numbered backwards from the end of the block. The pre-group numbers were allocated in such a way that the complete pre-group block of coaches generally occupied the last and highest numbers in any series. This usually left a gap between the end of the LMS standard block and the start of the pre-group block which was available for new construction. In some cases the 1932 planners underestimated the size of the number blocks they would need and certain coaches overflowed into the other blocks - these are annotated below.

1-99	First Class Kitchen/Dining Cars 1-44 LMS Standard types 45-58 Vacant 59-99 Pre-group types	3400-3499	Push pull conversions of older gangwayed stock - both pre-group and LMS Standard types (some of the pre-group examples were built new as push pull vehicles).
100-199	Third Class Kitchen/Dining Cars and Buffet Cars 100-148 LMS Standard types 147-199 Pre-group types (including first 147/8)	3500-4999	Corridor Composites 3500-4514 LMS Standard types 4357-4999 Pre-group types (including first 4357-4514) (2) 4800-4899 LMS Standard types
200-299	Composite Kitchen/Dining Cars 200-221 Ex-Pullman cars (most Scottish) 222-252 LMS Standard types 253-299 Sundry post-1947 cafeteria conversions of LMS coaches 241-299 Original pre-group allocation	5000-5199	Corridor First Brakes and Open First Brakes 5000-5004 LMS Standard Lounge (open) brakes 5005-5077 LMS Standard BFKs 5078-5144 Vacant 5145-5199 Pre-group types
300-499	First Class Sleeping Cars 300-402 LMS Standard types 403-437 Vacant 438-496 LNWR (with a few gaps) 497-499 Vacant	5200-6599	Corridor Third Brakes 5200-6038 LMS diagrams 5990-6599 LMS diagrams
500-699	Third Class Sleeping Cars 500-599 LMS Standard SLT 600-624 LMS type SLT(T) 625-699 Vacant	6600-7399	Corridor Composite Brakes 6600-6876 LMS Standard types 6877-6956 Vacant 6957-7399 Pre-group types
700-799	Composite Sleeping Cars 700-724 LMS Standard types 725-789 Vacant 790-799 LNWR - note second 798/9 later given to H.M. The King's and H.M. The Queen's Saloons	7400-7599	Vestibule Firsts (both FO and RFO) 7400-7575 LMS Standard types (Note: First 7465-89 were later downgraded and the numbers in part used again for later standard coaches) 7556-7599 Pre-group types (including first 7556-7575)
800-999	Special Saloons - mainly pre-group varieties	7600-9699	Vestibule Thirds (both TO and RTO) 7600-9518 LMS Standard types 9519-9561 Vacant 9562-9699 Pre-group types
1000-1199	Corridor Firsts and Semi-Open Firsts 1000-1128 LMS Standard types 1128-1199 Pre-group types (including first 1128)	9700-9799	Vestibule Composites (both CO and RCO) 9700-9758 LMS Standard types 9759-9791 Vacant 9792-9799 Ex-LYR
1200-3399	Corridor Thirds 1200-2516 LMS diagrams 2235-3399 Pre-group types (including first 2235-2516)	9800-9999	Vestibule Brake Thirds 9800-9999 LMS Standard types 9971-9999 Pre-group types - first coaches with these numbers

This concluded the initial allocation of numbers for passenger carrying non-articulated gangwayed stock. Extra batches built after the number series filled up were as follows:-

Corridor Thirds: 12750-13184	19000-19999 Non-Corridor Lavatory Composites
Corridor Composites: 24500-24739	19000-19199 LMS Standard types
Corridor Brake Thirds: 26100-27095	19200-19386 Originally Vacant but 19377-86 were given to non-lavatory Cs to Lot 1450 (Motor fitted coaches - D1921A)
Vestibule Thirds: 27100-27449	19387-19999 Pre-group types also first 19385/6
Vestibule Third Brakes: 27900-27956	
) Some of these also originally used to renumber pre-group gangwayed stock to clear the original series for standard construction.	
10000-10699 Non-Corridor Firsts	20000-24399 Non-Corridor Third Brakes
10000-10131 LMS Standard types	20000-21251 LMS Standard types
10132-10308 Vacant	21252-22214 Vacant (22196-202 later used for ex-North London area LMS Standard brake seconds and 22203-14 for other downgraded coaches)
10309-10699 Pre-group types	22215-24399 Pre-group types (24317-31 later used again for Push-Pull driving trailers - 1950)
10700-15799 Non-Corridor Thirds	24400-24499 Non-Corridor Driving Trailer Thirds
10700-12267 LMS Standard types	24400-24459 LMS Standard types
12268-12277 Downgraded composites from 160xx series	24460-24499 Pre-group types and LMS standard conversions
12278-12283 Ex-MSJA trailers (converted 1954)	
12284-13610 vacant (12750-13184 used for overflow numbering of TKs and 13610 downwards used for various downgraded vehicles).	24500-24799 Non-Corridor Composite Brakes
13611-15799 Pre-group types	24500-24717 Vacant (no LMS designs) but later used for overflow numbering of Period III CKs 24500-24739
15800-15999 Non-Corridor Thirds - Motor Fitted	24718-24799 Pre-group types (including first 24718-24739)
15800-15857 Pre-group types	24800-24899 Non-Corridor Driving Trailer Composites
15858-15906 LMS Standard types	24800-24895 Vacant (No LMS Standard types)
15907-15996 Vacant	24896-24899 Ex-MR and Ex-LYR
15997-15999 LMS Standard types (Converted)	24900-24999 Non-Corridor Second Brakes
16000-17899 Non-Corridor Composites	24900-24906 LMS Standard designs for North London sets - later downgraded and renumbered 22196-202
16000-16325 LMS Standard types (16000-16006 originally compo. seconds)	24907-24999 Vacant but 24989-99 later used for marked up BTs (pre-group) which were later marked down again
16326-16330 Vacant - allocated initially to 17900-4 (Push-Pull version)	25000-25699 Non-Corridor Lavatory Third Brakes
16331-16796 LMS Standard types	25000-25272 LMS Standard types
16797-16876 GWR designs built post-1947 and given LMS series numbers	25273-25507 Vacant
16850-16937 Originally part of the vacant series but later used in part (post-1947) for ex-CLC stock and marked down pre-group firsts	25508-25699 Pre-group types
16938-17899 Pre-group types	25700-25999 Non-Corridor Lavatory Composite Brakes
17900-17999 Non-Corridor Composites - Motor Fitted	25700-25777 Vacant (No LMS Standard designs)
17900-17942 LMS Standard types	25778-25999 Pre-group types
17943-17957 Vacant but some later used for conversions	26000-27999 Pre-Group Four/Six Wheel Passenger Carrying Coaches - All Types
17958-17999 Pre-group types	
18000-18199 Non-Corridor Lavatory Firsts	
18000-18029 LMS Standard types	
18030-18161 Vacant	
18162-18199 Pre-group types	
18200-18999 Non-Corridor Lavatory Thirds	
No LMS Standard designs built but 18614-18999 were pre-group coaches	

Note: Survivors of this block again renumbered 26000-99 when the 'overflow' numbering began

28000-29899 Electric Multiple Unit Stock
The number allocation in these blocks was a little complex.

29900-29999 Miscellaneous Railcars, etc.

30000-30199 Kitchen Cars
30000-30106 LMS Standard types
30107-30196 Vacant
30197-30199 Ex-LNWR

30200-30399 Post Office Vehicles
The numbers in this group were completely haphazard.

30400-32899 Bogie Corridor Full Brakes
30400-32019 LMS Standard types and LMS built conversions from other coaches. There were vacant numbers.
32020-32899 Pre-group types built as full brakes

32900-33499 Six Wheel Corridor Full Brakes
32900-33019 LMS Standard types
33020-33441 Vacant
33442-33499 Pre-group types

33500-44999 Non-Passenger Carrying Coaching Stock

45xxx numbers Chairman's and Engineer's Saloons (total of 16 to LMS design) plus pre-group examples.

50000 upwards Articulated coaches.

List of Drawings for Modellers, LMS Standard Stock.

Sleeping Cars

68' Period I (LNWR style) SLF D1705 HC p19
69' Period III SFL D1926 HC p22
68' Period II SLC D1781 HC p21
RM 7/67
69' Period III SCL D1947 SK P13
60' Period I SLT D1709 HC p20
65' Period III SLT D1863 HC p23

Kitchen and Dining Cars

68' Period II RF D1718 HC p24
68' Period II RC D1811 RM 3/68
68' Period III RC D1938 SK P16
68' Period III RT D1901/1923 HC p25
50' Period III RK D1912 SK P29

Side Corridor Coaches

57' Period I FK (all door) D1747 HC p4
MRC 12/66
57' Period III FK (5½ compartment) D1930 HC p14
57' Period III FK (6 compartment) - including 'porthole' version) D2121/2162 HC p15
57' Period I BFK (two window) D1654 HC p5
57' Period II BFK (luxury) D1717 HC p10
MRC 12/67
57' Period III BFK (4½ compartment) D1910 HC p14
57' Period I CK (all door) D1694 HC p4
MRC 8/66

60' Period I CK (two window) D1716
60' Period II CK (steel panelled) D1791
60' Period III CK (pre-war) D1925/1969
60' Period III CK ('porthole') D2159
57' Period I BCK (all door) D1755
60' Period II BCK (wood panelled) D1720
62' Period III BCK D1932/2010
57' Period I TK D1695
60' Period II TK (wood panelled) D1782
57' Period III TK (pre-war) D1899
57' Period III TK (post-war) D2119
57' Period I BTK D1696
57' Period III BTK (pre-war) D1905
57' Period III BTK (pre and post-war) D1968

Period I/II Luxury Stock

57' Period I semi-RFO D1707
57' Period II semi-RFO D1719
57' Period I BFO (lounge) D1741

The following list contains those drawings which are known to the Society to be accurate enough for model making - that is, they have either been prepared from or checked against the official diagram book and works drawings. It is not claimed to be an exhaustive list. The main source is the LMS section of 'Historic Carriage Drawings in 4mm Scale' published in 1969 by Ian Allan Limited. This source is referred to as HC p.xx in the following table. Two other good sources are the back issues of Model Railway Constructor and Railway Modeller, referred to as MRC and RM respectively, followed by the date of issue referred to. The final source is the Skinley range of blueprints, recommended drawings from which are referred to as SK followed by the Skinley reference number.

HC p5 Vestibule Coaches
MRC 10/67
HC p11 60' Period II RFO/RTO/TO (wood panelled) HC p11
RM 3/69 D1721/1722/1738/1795
RM 1/69 65' Period III RFO D1902 HC p17
MRC 12/66 60' Period III FO D1917/2118 HC p17
HC p9 57' Period III CO D1903 HC p16
RM 3/69 57' Period I TO/RTO (two window)
HC p4 D1353/1692/1699 HC p6
HC p10 57' Period I TO (two window - 'all steel') D1745 MRC 1/66
MRC 12/67 57' Period I RUO (single window) D1706 HC p6
HC p12 57' Period II TO (steel panelled) D1807 HC p11
HC p13 57' Period III TO/RTO D1904/1981 HC p16
HC p3 57' Period III TO D1915 SK P17
HC p12 57' Period I BTO (two window - 'all steel') D1746 MRC 1/66
RM 6/66 Twin BTO + TO; TO + TO; CO + TO; Articulated
HC p13 Excursion stock D1965/1966/1967 HC p18

1939-40 Coronation Scot Stock

HC p7 Twin BFK + FK D2014 SK P32/P33
HC p8 Twin semi-FK + RFO D2015 (with cocktail lounge) SK P34/P35
MRC 12/67 Twin RK + RTO D2016 SK P36/P37
Club Car Brake D2020 SK P42

Passenger Full Brakes

50' Period I BG (wood panelled) D1778	HC p30
50' Period I BG ('all steel') D1715	MRC 4/65
50' Period III BG D2007	HC p30

Non-Corridor Stock

57' Period I FL D1761	HC p28
57' Period I CL D1686	MRC 10/65
57' Period II CL D1736	HC p28
57' Period I BTL D1685	MRC 10/65
57' Period II BTL D1737	HC p28
57' Period I C D1701	HC p26
57' Period II C D1734	HC p29
57' Period I T D1700	HC p26
57' Period II T D1784	HC p29
57' Period III T D1906/1906A	HC p29
57' Period I BT D1703	HC p26
57' Period II BT (motor driving) D1790	HC p29
54' Period I F D1762 (LT & S section)	HC p27
54' Period III F D1787 (LT & S section)	SK P9
54' Period I CL D1765 (LT & S section)	HC p27
54' Period III CL D1788 (LT & S section)	SK P10
54' Period I T D1768 (general service and LT & S section)	HC p27
54' Period III T D1789 (LT & S section)	SK P8
54' Period I BT D1771 (6 compartment)	HC p27
54' Period I BT D1772 (7 compartment, LT & S type)	HC p27
54' Period III BT D1914 (LT & S section)	SK P11

Note: The Cathcart Circle stock can be modelled from the drawings of the Period I LT & S coaches by omitting raised beading, as can the Period II LT & S sets.

Non-Passenger Coaching Stock

30'5" Slatted Milk Van (six wheel) D1873	RM 4/67
31'0" Insulated Milk Van (six wheel) D1936	RM 10/66
42'0" Luggage and Parcels Van D1870	RM 7/64
17'6" Fish Van D1885	RM 1/64
31'0" Insulated Sausage Van (six wheel) D1955	RM 12/66
28'0" Open Carriage Truck D2027	MRC 8/61

Special Saloons.

F.W.Shuttleworth.

EX MIDLAND RAILWAY

EX LY RLY

MR No.	LMS 1923 No.	LMS 1933 No.		PG No.	LMS 1923 No.	LMS 1933 No.		
339,342 & 349	-	946-8	B. Derby 1911 Lot No. 693	1	10701	45037	B'Newton Heath 1906	Ex Directors' Saloon Later Used by Engineer
1910	-	809	B. Derby 1912 Lot No. 742			168821 Later		
2871	-	917)		3	10702	45039	B'Newton Heath 1886	Officers' Saloon Ex Club Saloon
2884	-	918)	B. Derby 1909 Lot No. 664					
2888-9	-	919-20)	Bogie Clerestory Family Saloons	4	10703	-		Invalid Saloon - Rebuilt from Club Saloon in 1919
2897	-	990	B. Derby 1909 Lot No. 664	26	10715	819		Rebuilt as Club Saloon in 1922 from an Open Composite
2899	-	921	B. Derby 1909 Lot No. 664					
2934	-	932	B. Derby 1909 Lot No. 664	47	10721	820	B'Newton Heath 1912	Club Saloon
			Bogie Clerestory Family Saloons	50	10722	995	B'Newton Heath 1911	Family Saloon
2967	-	991	B. Derby 1909 Lot No. 664	135	10772	45038	B'Newton Heath 1883	Engineers' Saloon Converted from 6 Wheels to Bogie in 1906
2234	-	45010	REB 1917	247	10825	45017	B'Newton Heath 1923	Medical Officer's Car
			Ex Steam Rail Car (Converted for supt of line)	11	-	994	B'Newton Heath 1898	6 Wheeled Invalid Saloon
2501	-	45015	Directors' Saloon - Became Dynamometer Car No. 3/45052)	276	10874	45050		Dynamometer Car
24 RE No.2552	2552	45016	B'1887 as 6W Inspection Saloon REB as Bogie in 1908	150	13399	950	B'Newton Heath 1904	6 Wheeled Picnic Saloon
1 RE No.2501	02501	45034	B'1881 Clerestory Roof - Open Ends	2007	-	951	B'Newton Heath 1895	6 Wheeled Football Saloons
100 RE No.3458	3458	45035	B'1891 6 wheels Open Balcony One End	2008	13894	952	B'Newton Heath 1904	6 Wheeled Football Saloons
139 RE No.3491	3491	45036	B'1887 6 wheels	2009		953	B'Newton Heath 1899	6 Wheeled Football Saloons
3572		818	Club Saloon	2010	13921	954	B'Newton Heath 1899	6 Wheeled Football Saloons
3638		993	B'Derby 1912 Lot No. 754	2011	13922	955	B'Newton Heath 1899	6 Wheeled Football Saloons
341-6 & 3648		922-928	B'Derby 1903 Lot No. 550	2509	13325	958	B'Newton Heath 1900	Bogie Picnic Saloon
3649		930	B'Derby 1903 Lot No. 550	185	11865	956	B'Newton Heath 1900	Bogie Picnic Saloon
3650		929	B'Derby 1903 Lot No. 550	510	12095	957	B'Newton Heath 1900	Bogie Picnic Saloon
3651		992	B'Derby 1904 Lot No. 550	1858	13006	959	B'Newton Heath 1901	Bogie Picnic Saloon
3653		931	B'Derby 1903 Lot No. 550	1872-3	13018-9	960-1	B'Newton Heath 1901	Bogie Picnic Saloon

EX N.S.R.EX G & S.W. RAILWAY

<u>PG No.</u>	<u>LMS 1923 No.</u>	<u>LMS 1933 No.</u>		<u>PG No.</u>	<u>LMS 1923 No.</u>	<u>LMS 1933 No.</u>			
	14744	962	Built 1896						
356	14747	45040	Built Circa 1896		17600	45019	Built	1895	Ex Directors' Saloon - American Pullman Style - Clerestory. Later Used by Scottish Region Officers
	14822	963	Built 1901	148	18573	822	Built	Barrasie 1906	
	14901-2	964-5	Built 1909		18575-7	938-40	Built	Barrasie 1902	
	14905	966	Built 1909		18572	941	Built	Barrasie 1909	
	14899	967	Built 1909						
	14988	45041	Built 1920 by the Drewry Car Co.						

EX HIGHLAND RAILWAYEX F.R.

					18615	823	Built	Inverness	Ex Directors' Saloon
					18747	972	Built	Inverness 1897	6 Wheeled Picnic Saloon
					18846-7	973-4	Built	Inverness 1907	Bogie 3rd Class Excursion Saloons
1	15001	821	B. Barrow 1899						
	15003	968	B. Barrow 1891						
	15006	969	B. Barrow 1900						

EX CHESHIRE LINES COMMITTEE

201	-	997	Built by GNR 1912	Bogie Family Saloon
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EX CALEDONIAN RAILWAYEX DUKE OF SUTHERLAND

15337-41	933-7	Built St. Rollox 1907	Bogie Saloons	57A	-	45065	Built Wolverton by LNWR	Preserved
15302	970	Built St. Rollox	Bogie Saloons					
15312	971	Built St. Rollox 1898	Bogie Saloons					
15555	45018	Built St. Rollox 1918	Saloon Rebuilt 1957 with Observation End Later Used by Scottish Region Officers					

EX N.L. RAILWAY

1032	-	45003	Built 1874	Ex Directors' Saloon - Preserved by LNWR
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<u>EX. M & C RLY.</u>				<u>EX. LNW RLY</u>						
} Nil Return for Saloons				2080A	-	45020	6 Wheeled Inspection Saloon			
<u>EX. G & K E RLY.</u>				ED33	-	45021	6 Wheeled Inspection Saloon sold 1939 to MMR			
<u>EX. S M J RLY.</u>						010391	45022	6 Wheeled Inspection Saloon replaced by EX. 45022		
<u>EX. WIRRAL RLY.</u>						010392	45023	6 Wheeled Inspection Saloon		
<u>EX. CLEATOR & W J RLY.</u>						2119A	010393	45024	6 Wheeled Inspection Saloon converted from Family Saloon	
<u>EX. LNW RLY.</u>	<u>ROYAL TRAIN</u>					010394	45025	B. Wolverton 1874	6 Wheeled Inspection Saloon S & T Eng. M/C	
Not Numbered by LNWR	(800 King's Saloon	B. Wolverton	1903	Replaced in 1942 by LMS New Saloons Nos. 798 & 799		010395	45027		6 Wheeled Inspection Saloon	
"	(801 Queen's Saloon	B. "	1903							
"	802 Queen Victoria's Saloon	B. Wolverton	1903	Preserved Semi Royal Saloons						
5071-6	803-807									
5624-5	10070-1	5154-5	B. Wolverton	1906	1ST Class Royal Train Brakes					
5200 & 5249	10400/11	76 & 77	Built	1900 & 1901	Royal Train Diners					
5114	10365	477	B. Wolverton	1904	Cleres. 1ST Class Royal Train Sleeper		010396	45026	B. Wolverton 1879	6 wheeled Inspection Saloon
5132	10321	495	B. Wolverton	1916	Eliptical 1ST Class Royal Train Sleeper		010398	45029		6 wheeled Inspection Saloon
<u>DEPARTMENTAL AND SPECIAL SALOONS</u>							010399	45030		6 wheeled Inspection Saloon
<u>RG. No.</u>	<u>LMS 1923 No.</u>	<u>LMS 1933 No.</u>				<u>WCJS Nos.</u>				
5000	-	45000	Built 1919	Directors Saloon		353/4/6	10548/9/51	45031-3	B. Wolverton 1899	Bogie Clerestory Ex. Family Saloons to Eng. Blackburn, Cricklewood and Stoke respectively
5201	10501	45001	Built 1897	Original Directors Saloon Later to Engineer North Wales				45051	B. Wolverton 1908	Dynamometer Car
5318	10500	45002	Built 1914	Built as Directors Saloon						
5176	10684	45014	Built 1892	Converted from Inspection Saloon D.O.M. Crewe		<u>DAY, INVALID & FAMILY SALOONS</u>				
5177	10685	45011	Built 1892	Inspection Saloon D.T.M. Swansea		5320	10681	812	B. Wolverton 1915	Invalid Saloon converted from 1st World War Ambulance Car.
			} 42'.00" Sleepers			5023	4619	810	B. Wolverton 1907	Invalid Saloon converted from 1st World War Ambulance
5178	10686	45012	Built 1892	Inspection Saloon D.O.M. Manchester Victoria		5027	10509	811	B. Wolverton 1907	Invalid Saloon converted from 1st World War Ambulance
5179	10683	45013	Built 1892	Inspection Saloon D.T.M. Chester						
5019A	10400	-	Built 1879	6 Wheel Inspection Saloon (scrapped prior to 1933)		5003/6/7/10				
5020A	010397	45028	Built 1879	6 Wheel Inspection Saloon		16/81	10510-5	904-9	B. Wolverton 1894	Bogie Family Saloons in 1928 converted to Picnic Saloons
		45099	Built 1879	6 Wheel Inspection Saloon Re No. from 45020-30 Batch		5017-22	10516-20/22	888-893	B. Wolverton 1898	Bogie Family Saloons majority converted to Picnic Saloons 1926-8

P.G. No.	LMS 1923 No.	LMS 1933 No.							
					5219	10594	-	B. Wolverton 1898	Bogie Picnic Saloon
5039/41/3					5220-5	10595-10600	838-843	B. Wolverton 1898	Bogie Picnic Saloon
4/7/9/51-4	10523-32	876-885	B. Wolverton 1898	Bogie Family Saloons	5226-8	10601-3	844-6	B. Wolverton 1899	Bogie Picnic Saloon
5055	10533	-	B. Wolverton 1898	Bogie Family Saloons	5229	10604	-	B. Wolverton 1899	Bogie Picnic Saloon
5061	10534	886	B. Wolverton 1898	Bogie Family Saloons	5230	10605	847	B. Wolverton 1899	Bogie Picnic Saloon
5062-7	10535-40	894-9	B. Wolverton 1898	Bogie Family Saloons	5232	010606	-	B. Wolverton 1898	Bogie Picnic Saloon
5119-20	10541-2	900-1	B. Wolverton 1898	Bogie Family Saloons	5233	010607	825	B. Wolverton 1898	Bogie Picnic Saloon
5050/6	10543-4	976-7	B. Wolverton 1898	Bogie Family Saloons these two were one time used on Royal Train	5236/7/9 40/61-3	10608-14	848-54	B. Wolverton 1900/1 (last three 1901)	Bogie Picnic Saloon
5057-9	10545-6	-	B. Wolverton 1898	Family Saloons	5264	10615	-	B. Wolverton 1901	Bogie Picnic Saloon
5060	10547	887	B. Wolverton 1898	Bogie Family Saloons	5265-80	10616-10631	855-870	B. Wolverton 1901	Bogie Picnic Saloon
WCJS 355	010550	978	B. Wolverton 1899	Bogie Family Saloons	2136A	010582	975	B. Wolverton 1886	Bogie Picnic Saloon fitted for Motor Train Working
WCJS 357	010552	979	B. Wolverton 1899	Bogie Family Saloons					
WCJS 358- 64	10553-9	903/10 980/1 911, 982/3	B. Wolverton 1899 & 1900 (last two)	Bogie Family Saloons	5004 & 5013	10632-3	944-943	B. Wolverton 1896	Bogie Picnic Saloon 6 wheeled Clerestory Picnic Saloon (Originally Family Saloons)
WCJS 365	10560	3400	B. Wolverton 1900	Bogie Family Saloons fitted for Push & Pull					
WCJS 366- 372	10561-7	984,912 985-9	B. Wolverton 1900 & 1901	Bogie Family Saloons	5014/5/38/ 40/2/5/6	10634-40	-	B. Wolverton 1896	6 wheeled Clerestory Picnic Saloon (Originally Family Saloons)
5008-9/ 11/12	5133 10568-72	871-5	B. Wolverton 1896	Bogie Family Saloons later converted to Picnic Saloons	5048	10641	945	B. Wolverton 1897	6 wheeled Clerestory Picnic Saloon (Originally Family Saloons)
					5137-5142	10642-7	-	B. Wolverton 1897	6 wheeled Clerestory Picnic Saloon (Originally Family Saloons)
<u>CLUB SALOONS</u>					5005, 5162 5167	10648-54	-	B. Wolverton 1892	6 wheeled Arc Roof Picnic Saloons (Originally Family Saloons)
4655	10028	1162	B. Wolverton 1908	Ex. American Boat Train converted to Club Car 1928					
4530	10023	816	B. Wolverton 1908	Ex. American Boat Train converted to Club Car 1928	5168	10655	942	B. Wolverton 1892	6 wheeled Arc Roof Picnic Saloons (Originally Family Saloons)
5068	10573	813	B. Wolverton 1905	Club Saloon Liverpool - Llandudno					
5234/5	10574-5	814/5	B. Wolverton 1908	Club Saloon M/C	5169-5175	10656-62	-	B. Wolverton 1892	6 wheeled Arc Roof Picnic Saloons (Originally Family Saloons)
5238	10577	-	B. Wolverton 1900	Club Saloon originally a Picnic Saloon					
5058	10576	902	B. Wolverton 1898	Club Saloon originally a Family Saloon	5181-5195 5199& 5319	10663-77 10678-9	-	B. Wolverton 1893	6 wheeled Picnic Saloons (5199 Relegated to Departmental use, seen at Aston MPD.)
<u>PICNIC SALOONS</u>									
5008/9/ 11/12	5133 10568-72	871-5	B. Wolverton 1896	Converted from Family Saloons					
5206-7	10581-2	826-7	B. Wolverton 1898	Bogie Picnic Saloon					
5208	10583	-	B. Wolverton 1898	Bogie Picnic Saloon					
5209-18	10584-93	828-37	B. Wolverton 1898	Bogie Picnic Saloon					

L.M.S. BUILT SPECIAL SALOONS

<u>No.</u>			
822	Built 1935	Manchester - Blackpool Club Saloon	
823	Built 1939	Coronation Scot Saloon	
45020	B. Wolverton 1944	Departmental Saloon	Engineer Glasgow
45021	B. Wolverton 1944	Departmental Saloon	Engineer Derby North
45026	B. Wolverton 1944	Departmental Saloon	Engineer Watford
45028	B. Wolverton 1942	Departmental Saloon	Engineer Liverpool
45029	B. Wolverton 1942	Departmental Saloon	Engineer Crewe
45030	B. Wolverton 1942	Departmental Saloon	Engineer Barrow
45035	B. Wolverton 1947	Departmental Saloon	Perm'nt Way Chief Civil Engineer
45036	B. Wolverton 1947	Departmental Saloon	Engineer District Engineer Perth
45043	B. Wolverton 1940	Departmental Saloon	Engineer Signal Engineer Assistant to Chief Civil Engineer Watford
45044	B. Wolverton 1940	Departmental Saloon	District Engineer Walsall
45045	B. Wolverton 1940	Departmental Saloon	District Engineer Manchester
45046	B. Wolverton 1941	Departmental Saloon	District Engineer Leeds
45047	B. Wolverton 1941	Departmental Saloon	District Engineer Lancaster
45048	B. Wolverton 1941	Departmental Saloon	District Engineer Derby South
45052	B. Derby 1904	Smokebox Analysis Car (ex 45015)	
31209	B. Wolverton 1941	Royal Train Sleeping Brake and Power Car	
45005/6	Built in 1942	As Chairman's Saloons - rebuilt 1948 as Sleeping/Day Saloons - often used in Royal Train Formation	

LMS-DESIGNED VEHICLES BUILT AFTER NATIONALISATION

45049	Built in 1949	Dynamometer Car Departmental Saloon	
45053-5	Built in 1949	Mobile Testing Units	

Introduction

At a very early date all the railways discovered that there was a considerable sum of extra revenue to be had by transporting goods in or at passenger train speeds. Since the very early instances of this high speed goods services were physically conveyed from passenger stations to passenger stations by passenger carrying trains, the revenue obviously went to the passenger revenue account. This in turn lead eventually to goods vehicles being built for this traffic and, therefore, being charged against passenger accounts.

On the operating side of the railways the need was for vehicles which could operate safely at passenger speeds which obviously require rather more advanced springing, braking, and lubrication than ordinary goods vehicles. Thus there came into being two types of non-passenger coaching stock, that which was N.P.C.S. because it was charged against passenger revenue, and that which was N.P.C.S. because it was mechanically the equal to a coach.

Early L.M.S. Vehicles

The L.M.S. inherited N.P.C.S. vehicles from its constituents which were so called because they were charged against passenger revenue only, because they were charged to and built to passenger specification, and some which were built to passenger specification but charged to goods. Most, if not all, these last type were transferred to the passenger account in the 1932 renumbering. The LMS then proceeded to build further vehicles, some to passenger specification, some to goods specification, but to charge them all to passenger accounts thus both types of vehicle received semi-passenger livery and numbers.

In 1923 the probable accepted specification for passenger stock was minimum 12'0" wheelbase and 21'0" over headstocks, 3'6" diameter wheels, continuous brake gear, screw couplings and passenger type buffers. The LMS then proceeded to build several hundred fish vans allocated to passenger stocks which were fitted or piped only variations of the current design in 17'6" long goods vans, first on 9'0" wheelbase and later on 10'0" wheelbase chassis. This cannot have been helpful to the operating department who sooner or later must have been faced with the problem of running a passenger rated fish train with piped only vehicles!

The LMS's main initial building efforts at proper non-passenger coaching stock was directed to variations of a theme on the M.R. six wheeled slotted milk van. LMS versions of this vehicle came out as covered carriage trucks, Motor car vans, milk vans (slatted or louvered, or slatted and louvered) and fish vans. The design allowed for the bodies to be mounted on new LMS underframes (virtually the standard M.R. design) ex-M.R. six wheel coach chassis or, with modifications to the length, on ex-LNWR or other six wheel coach chassis. It was an excellent way of assisting in implementing a policy of bogie vehicles only for passenger carrying. It gave a salvage value to the chassis of scrapped six wheeled coaches.

The bulk of the remainder of the early non-passenger coaching stock was either horse boxes or calf vans on 21'0"/12'0" wheelbase chassis, some of which were again second hand. The rest were bogie vehicles nearly all built to adjustable designs on second hand chassis as aeroplane or theatrical vans.

In the late nineteen twenties the railways started to convert from carrying milk in churns to in tank wagons. The LMS conformed with the other railways in building some four wheeled passenger rated chassis on to which the assorted large Dairies mounted their own stainless steel or glass lined tanks. These vehicles were involved in several derailments and as a result the passenger vehicle specification was changed about 1930 to minimum 15'0" wheelbase or six wheeled. All future milk tank chassis were built as close coupled six wheelers and all the previously produced four wheelers were converted to six wheelers.

Unfortunately, there seems to have been a breakdown in communications as the LMS continued to build 12'0" wheelbase horse-boxes until the end. Only one experimental 15'0" wheelbase horse box was built which meant that the only suitable vehicles available during the thirties and forties for transporting horses on the real high speed express trains were some ex-Caledonian six wheelers.

Later LMS Vehicles

In 1933 the LMS introduced a steel sheeted bogie van with side and end doors and fold-away wall racks which they called luggage and parcels van. This is a most important design as it was used for all sorts of passenger rated goods transport, parcels, perishable fruit and vegetables, motor cars, churn milk, theatrical props, and even fish. A few variants were built with higher roofs as Aeroplane vans and some fitted with reinforced floors as elephant vans. These vehicles became virtually the standard non-passenger coaching stock vehicle of the LMS to the end and beyond.

In the late thirties in order to fulfil customers' demands the six wheel chassis was resurrected with an insulated body as a cream van, and similar insulated bodies were provided on four six and eight wheeled chassis for conveying Palethorpes sausages. The final fling of the six wheel chassis came post-War when in response to Government encouragement some very handsome vertically boarded four door fish bodies were built on this chassis.

Full Brakes

I have not covered full brakes in the foregoing as it is a moot point as to whether they are passenger vehicles or non-passenger coaching stock. Photographic evidence suggests that most of them were used as parcels vans most of the time which makes me wonder why the LMS and BR went to the expense of providing the guards equipment which is very rarely used. However, the LMS did provide special brake vans for parcels and perishable trains which not only conformed to the passenger coaching stock specification but provided the guard with a stove. This was a necessary provision

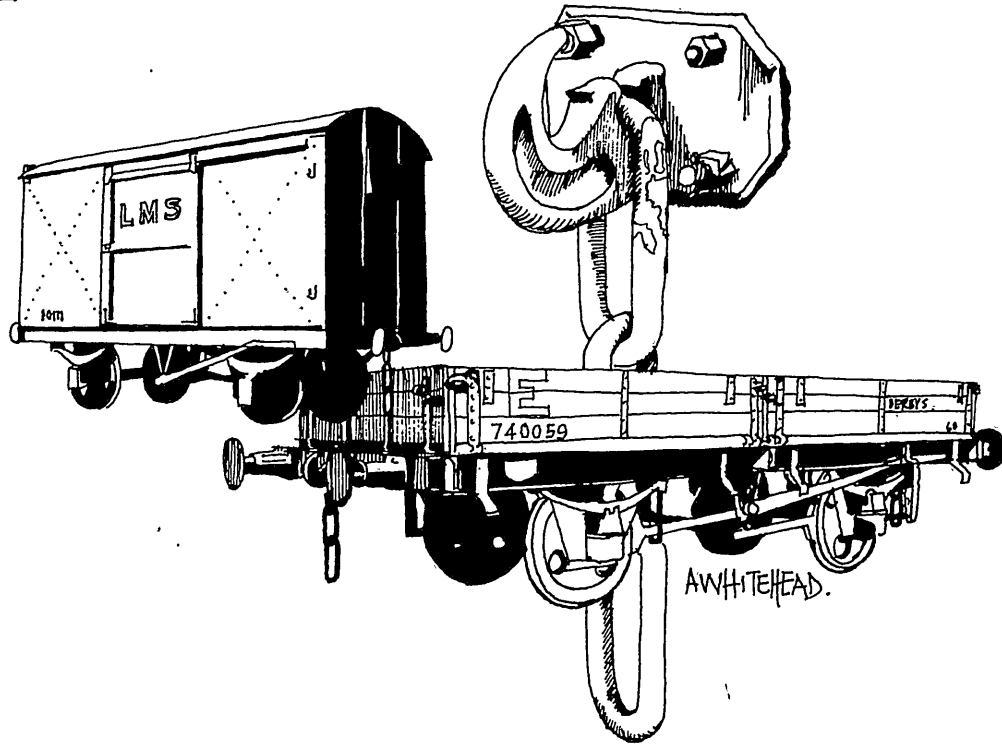
as few N.P.C.S. vehicles carried steam heating pipes and there was, therefore, no way of connecting the guard to the steam heat from the engine. This was initially done by fitting pre-group six wheel or short bogie full brakes with a stove and branding them "STOVE". Although many of these converted stoves saw service well into B.R. days they were beginning to get a bit obsolete in 1932 and so the six wheel STOVE R brakes were built. These vehicles were obviously intended as guard's accommodation in trains of non-passenger coaching stock but like the bogie brakes many were used as parcels vans for much of their working life.

Operation

Non-passenger coaching stock was initially tacked on to a passenger train as necessary but as the traffic developed then the need for complete trains of such vehicles became obvious. Most pre-group railways had fish, milk or parcels trains which did not carry passengers and frequently Mail and Newspaper trains had only taken, if any, passenger accommodation. Special trains were run of horse boxes to race courses and fairs, and of covered carriage tracks to motor vehicle exhibitions but for the most part it was in 1923 still tacking vehicles on to passenger trains as necessary. This practice had, however, proved inconvenient to the LNWR and in order to stabilise the loadings of their main passenger services had instituted a daily "Horse and Carriage" train service over most of their principal routes. These trains picked up and put down as necessary non-passenger coaching stock vehicles en route and proved to be an efficient way of dealing with the problem. The LNWR planned to extend the service to more routes but on the formation of the LMS the Midland who had not experienced the same problems as the LNWR had a major say in service developments and so the expansion of the "Horse and Carriage" service was delayed until the need for such a service could no longer be ignored.

For practical model railway purposes non-passenger coaching stock is an attractive proposition. A suitable vehicle can provide a splash of colour in a freight train. Transferred to a passenger train at a station this provides something for the passenger train to do other than stop and start and eventually link up with similar vehicles to form a perishable or parcels train. Such a train can be a full 'equal to thirty' load, or like the Longbridge parcels, one engine one full brake. Full trains of N.P.C.S. were frequently over powered at some time if not throughout their journey, so if you fancy a Duchess, three milk tanks, a bogie brake and another milk tank that is authentic. All such trains did have brake vans either Stove R or fitted 16'0" wheelbase goods brakes, again with stove, but these were rarely at the end of the train. A vehicle or two behind the brake gave the guard a much better ride and he, therefore, usually saw to it that his vehicle was near the end but not at the end. When fitted vehicles which do not conform to the non-passenger coaching stock specification are incorporated into the train this does not change the formation or the coding but does lower the speed at which the train may run to that of the lowest rated vehicle.

4



GOODS STOCK

In this article I am going to attempt to give some basic reasons for the divergence of stock which was acquired by the LMS from the various pre-group companies and then outline one or two major effects which the LMS had upon the stock.

The LMS received into stock in excess of 300,000 wagons from thirteen different companies, the totals and breakdowns of which you can see in Table 1. Most of this stock was in a varied state of repair and had been built to an absolute multitude of plans, diagrams and drawings. The reasons for this can be summarised as the different needs, loads, building methods and styles employed by the companies at different times. The different needs arose because the railways were the only practical means of transportation in bulk in the 19th century and as such had to be prepared to tackle virtually anything; whilst loads had gone up steadily in weight over the years the average wagon carrying capacity had gradually risen from 8 to 12 tons with the improvement in materials.

The LMS was the legatee of some sixty glorious years of wagon building history. Sometime late in the 1850's the wagon began to emerge from the 'Converted Haywain' style and developed into the 'dumb-buffer all wood wagon' well known in the 19th century. From about 1860 there was a period of continuous improvement and development which is highlighted by the advent of steel underframes, the vacuum fitting of wagons, the idea of either side brake levers and the adoption of spring buffing gear. All these improvements are adequately covered in 'British Goods Wagons' by Bob Essery, Don Rowland and Bill Steel to which I would refer you, however, the outward appearance of the wagons changed little in pre-group days. Thus these improvements coupled with the variety of designs caused the LMS to acquire such a divergence of stock as can only begin to be understood.

The many wagon works were also absorbed into the systems and there was provision in some goods yards for repairs to ailing wagons to be carried out on the spot. The activities of some works, such as the Viaduct Works of the LNWR at Earlestown are well known but, and without wishing to malign the railway, no-one seems quite certain what the Wirral Railway did with its 80 specimens, quite what they looked like, nor indeed where they came from in the first place.

The state of repair which the wagons were in when they were received by the LMS was a somewhat grim one. There are two major reasons for this the first of which has already been outlined and that is the extreme variety of stock which already existed. The reason why so many older wagons were still running is the First World War and that is the second major factor.

Because the railways of 1914-1918 were not devastated by bombing many historians have forgotten the integral part the railways played in the victory. Each company supplied hundreds of wagons for use in France and much valuable space in the workshops for wagon building and repair was turned over to munitions work. There was thus a shortage of new wagons and a glut of old, worn-out vehicles which, for the economic running of a railway, can be a disaster as they always breakdown in the most inopportune moments. As an instance of this shortage the L&Y was turning out between a third and a half of the total additions to stock which it had done before the War. The Midland cut its ordering from 3,200 to 2,000 wagons per year average. This shortage plus the need to ship vehicles overseas meant that there was more equipment and materials to be transported in fewer wagons. Contrary to the worn out stock point of view the fewer numbers of wagons is not a bad thing from an economic point of view but the railways were actually under Government control and not private ownership and there was no longer an interest in the economics of freight loading, merely getting the traffic through. The traffic overload was only solved by the wholesale commandeering of private owner stock and there were side effects on the state of that stock too.

With the end of hostilities the railways looked to days when the building up of stocks could begin again but they started, and one must admit quite correctly, with the rebuilding and refitting of locomotives and the refurbishing of carriages. The poor wagon was missed out of the finance appropriation lists. By 1920 and 1921, when wagon building figures finally began to rise, the Government had decided, in its infinite wisdom, that the railways worked better if they were large amalgams or, as they had done during the War, as a single unit. Accordingly, companies turned their attention from the development of stronger, better and higher capacity stock. Some reasoned that their policies would bear little fruit, quite rightly, and 1922 brought about a lull in construction. Of the 13 constituent companies there were only three whose wagon stock actually grew in total from 1905 to 1922, the LNWR, LYR and G&SWR. This was in part due to their erudite economic approach before 1914 but the remainder suffered greatly from bad wagon economics for the reasons I have outlined.

What the LMS did to the wagons it got. On 1st January, 1923, the LMS was faced with the prospect of what to do with the wagons and which designs they would follow. It is not really within the scope of this article to discuss the LMS Standard wagons but suffice to say that, as in other fields, it was the Midland tradition which held sway.

Thus many fewer new wagons than could have been projected to be built had actually been constructed in the period 1914 to 1922 adding fuel to the two arguments of lower stock numbers and poorer state of repair combined with age of the stock.

The many individual wagon numbering schemes conflicted greatly and after a short while a scheme was devised to allow the renumbering of all wagons except those of the Midland Railway. This scheme is shown in Table 2. The Midland was singled out for the special treatment mainly because it had the highest individual wagon total of any of the constituent companies and thus it meant that only two thirds of the stock needed renumbering. The scheme was quite strictly adhered to, or else chaos would have ensued but it is doubtful if any more than two-thirds of the total stock was ever dealt with from the repaint point of view owing to age and scrapping of items which could not be fitted into standard groups. Hence renumbering, relettering and repainting are the most obvious external influence which the LMS made to the majority of its pre-group wagons. A few wagons bore the brunt of several experimental styles before general rules and house styles were adopted. The different liveries of the pre-group companies were all altered to the standard grey, much to the dismay of the many company servants who had been intensely proud of their former employers and keeping trains running. So instead of starting as a forward looking body the LMS was hidebound by conventions from its forebears and it came as no surprise when it stuck to the large letters for the wagon sides.

Now the three letters L M S are not as conducive to painting on wagon sides as the two letters of say the LY or HR and on wagons with a centre door, particularly covered vehicles, setting out became quite a headache. Space does not permit describing the results in full but the major developments included:-

1. The adoption of large 18 inch letters in the 'normal' position wherever possible.
2. The use of a smaller 12 inch letter in restricted circumstances, especially on single plank and covered goods stock.
3. Wherever 1 and 2 were impossible the use of uneven spacing was permitted (especially true of outside framed vehicles).

4. For economic and standardisation reasons and to solve all spacing problems a new scheme of smaller lettering was adopted with the 1937 livery change and surviving pre-group vehicles were so emblazoned.

From the purely physical point of view alterations were few and were for operating purposes. Door alterations on LNWR 18' Covered Goods for strength, boarding up one end of L & Y and G & SW double end door wagons for safety reasons, rebraking if necessary and the usual repairs to temporarily incapacitated specimens are the major effects. The final alterations were administrative ones such as the upgrading of stock, L & Y Fish Vans and Mail Vans were two of the types originally built as goods stock which became NPCS and there was the alteration of the designated purpose of some vehicles without affecting their exterior appearance, particularly MR Cattle Vans which became Ale Vans.

And that briefly is what the stock was like at its inception and how it was utilised but 5 more figures will give further food for thought. The LMS received 305,000 wagons from the pre-group companies, 25 years later it handed over 280,000 wagons. During that time it built 205,000 wagons, thus 230,000 pre-group wagons went to the scrap heap but 75,000 survived and displayed the ravages of the LMS, and that's more stock than the LNWR itself owned! Alas, we know little enough about the LNWR, so the enormity of the knowledge problem displays itself.

A Dillington Follow Up

A 25" x 20" card prepared for Woodward of Accrington about 1930 for 7/6d by my grandfather contains the following information which fairly obviously points up that there must have been several wagons consigned to the Coal Dealer and probably from different collieries too. Woodward did indeed have some wagons of his own.

NOTE OUR PRICES

	Per Cwt
HEMSWORTH London Wallsend A real Wallsend. Burns well.	2/7d
HEMSWORTH London Wallsend COBBLES Our celebrated merry blaze.	2/4d
HEMSWORTH Haighmoor House Our noted best house. Clean & Hot.	2/4d

TABLE 1. WAGONS OWNED BY THE CONSTITUENT COMPANIES OF THE LMS : 1922

COMPANY	OPENS	COVEREDS	MINERALS	CATTLE	RAIL & TIMBER	SPECIALS	BRAKES	OTHERS	TOTALS
Midland	67,277	12,384	22,955	1,228	1,899	491	1,383		107,617
L&Y a	25,075	7,054		714	676	38	874		b
G&SWR	3,293	1,371	12,222	648		40		1,678	19,252
North Staffs.	given only as merchandise and mineral								6,248
LNWR c	44,733	14,934	9,113	2,367	3,114	455	1,806	300	109,061 b
Furness	given only as goods train vehicles								7,365
Highland	1,949	188		292	209	6		74	2,718
Caledonian	14,060	3,296	28,367	1,450		115		4,248	51,536
Maryport	given only as goods train vehicles								1,404
Cleator & Work									248
S.on A.&MJR	89	18		6	8		9		130
Wirral	72	3			2		3		80
Knott End									52
								Overall Total ...	305,711

- NOTES: (a) Lancashire and Yorkshire breakdown available for 1916 only.
(b) L&Y total combined with LNWR total and entered there.
(c) LNWR breakdown available for 1920 only.

Information from the 'Railway Year Book' for 1923, information as at 31.12.1922 except where otherwise stated.

WALLSEND NUTS

Special line. Very hot & Very clean. 2/1d

HOUSE COAL - COBS

A firm & not too-fast burning coal. 2/1d

HOUSEHOLD COBBLES Silkstone

Splendid value. Highly recommended. 2/-

KITCHEN COAL

Another good line. Clean. 1/11d

YORKSHIRE HOUSE NUTS

Special line. Clean. Large sales. 1/8d

5 cwt lots
1/7d cash

Specially prepared COKE for Bakers etc.

Apple size 3" x 1 1/4" 28/- per ton. Medium
2" x 1" 28/- ton. Small 1" x 1/2" 27/-
per ton.

If we apply the factors of different size and cost then everything could not have come in the same wagon. Moreover different collieries Hemsworth and Silkstone, are mentioned and different seams, Wallsend and Haighmoor. Mixing these would not have been of any advantage to the merchant as he relied upon word of mouth and good service to keep his business going. Offering different types of coal gave him a wider clientele and less chance of going out of business. ✓

SUMMARY OF MAIN POINTS

- (A) The received wagons.
1. A vast number of styles and tonnages caused by age, different styles of building and the general improvement of materials since 1895.
 2. World War I left a glut of old, worn out stock and a shortage of new wagons.
- (B) Economics.
1. There had been very little capital building in wagon stock since 1914 making the stock very much less economic to run as older vehicles needed more repairs.
 2. The shortage of wagons was generally a good thing but after having been handled by the Government the railways went back to looking after themselves and working their own uneconomic way.

- (C) Wagon Renumbering and Rebuilding.
1. No more than two thirds of the wagon stock was ever repainted with LMS and a new number where necessary, as in other standardisation schemes a lot of the individualistic stock disappeared quickly.
 2. Very little rebuilding or alteration of wagons other than for strengthening purposes took place.
- (D) Overall View.

The LMS took advantage of modern materials and techniques giving them the chance to replace the pre-grouping stock quite quickly and bring in standardisation.

TABLE 2. LONDON & NORTH WESTERN RAILWAY WAGON STOCK : 31ST DECEMBER, 1919

WAGON TYPE	UNFITTED	VAC.FITTED	VAC.PIPE ONLY	WEST.FIT.	WEST.PIPE
Open Wagons	43,664	42	84	--	--
Covered Wagons	11,101	2,987	690	1	101
Minerals	9,094	--	--	--	--
Specials	455	--	--	--	--
Cattle Wagons	1,152	22	1,150	--	43
Rail & Timber	3,061	--	--	--	--
Brake Vans	1,771	33	1	--	--
Misc. & Service	6,290	--	--	--	--
<u>TOTALS</u>	<u>76,588</u>	<u>3,084</u>	<u>1,923</u>	<u>1</u>	<u>144</u>

TOTAL number of wagons on system - 81,642

Percentage with some form of continuous breaking 6.3%.

TABLE 3. THE LMS WAGON RENUMBERING SCHEME

Midland	wagons retained numbers from	1 to 129,000
L&Y	wagons had	130,000 added to own no.
G&SWR	wagons had	170,000 added to own no.
G&SWR	brakes were renumbered from	190,000 onwards
North Staffs	wagons renumbered at random from	192,000 to 199,999
LNWR	wagons had	200,000 added to own no.
LNWR	service vehicles renumbered from	279,000 to 279,999
LNWR	brake vans had	280,000 added to own no.
LNWR	service vehicles renumbered from	282,000 onwards
Furness	wagons renumbered at random from	285,000 to 291,999
Highland	wagons renumbered at random from	292,000 to 299,999
Caledonian	wagons had	300,000 added to own no.
Caledonian	brakes and service vehicles renumbered from	353,000 onwards

NOTES:

1. The 1,914 vehicles of the Maryport & Carlisle, Cleator and Workington, Stratford-on-Avon and Midland Junction, Wirral and Knott End railways were presumably fitted into any convenient gaps or scrapped.
2. It is likely that some of the Midland and the G&SWR wagons were not numbered in sequence but renumbered as their old numbers cut across the renumbering scheme.

The LMS Railway Company, at the time of the grouping in January 1923 inherited some 305,000 wagons from the constituent companies. The first world war with its many and heavy demands on the workshops of this country, affected the facilities available for the building and repair of wagons which thereby were severely curtailed. as a direct result, many life expired and small capacity wagons had been retained in service. The early post war years too were full of uncertainty, and many companies faced with the prospect of losing their individual identities under the Amalgamation Act of 1921, were loathe to incur any capital expenditure, other than that which was absolutely necessary.

The total of wagons with a reasonable life expectancy, was therefore considerably below the book total, it was obvious that a large replacement programme would have to be undertaken by the new company, and this the LMS proceeded to do in no uncertain manner. The first year was no doubt spent in settling policy, new construction in this year was confined to certain pre-grouping types, built to their original owners orders or 'lots' as they were generally known. It is not certain how many new wagons were placed into traffic in 1923, but by the end of the year the LMS was ready to build to its own orders and designs.

As in other departments, Midland Railway practice predominated, and many of the new designs were in fact up-dated versions of existing MR types. In 1924 no less than 18,264 new wagons were built, all but a handful being of LMS design. A comparable rate of construction was maintained until the end of 1930, by which time a total of 106,000 wagons of LMS design had entered service. In seven years therefore, a total equivalent to one-third of the wagons taken over at grouping had been built. In fact the proportion of new wagons to total stock was somewhat higher, since the overall total had been reduced by the end of the period to about 283,000. This reduction was achieved with little if any loss to overall carrying capacity, since the new wagons in general had a higher capacity than those they replaced.

The 1930's saw a world wide drop in trade, and this period known as the depression was reflected by a sudden and dramatic drop in the wagon building programme. In 1931 only 2,665 new wagons were built and in 1932 this figure dropped still further to 1,987. Thereafter the figures improved somewhat, and in 1936/7 production was again into five figures, a total of 24,721 wagons for the two years being registered. This no doubt reflected the monetary aid which the railways received at this time from the government, as part of a scheme to alleviate the unemployment problem. The final period of the LMS era, was an almost carbon copy of the final years of the pre-grouping age. For the second world war was followed by a post war period of shortages

and uncertainty, which culminated in the nationalisation act by which the LMS lost its individual existence, though not its influence. From 1938 to 1947 production of new wagons averaged about 5,000 a year, apart from 1941, where the dark times this country was facing is reflected in the lowest figure for new wagons recorded by the LMS at 1,718. During the twenty-five years of its existence the LMS built some 206,000 new wagons of all types, over half of these being built in the first seven years.

The majority of the wagons built by the LMS for ordinary goods traffic, had a carrying capacity of twelve tons, and were 17'6" long over headstocks. They were mounted on four wheels the wheelbase on those built up to 1930 being 9'0" increased in the majority of cases to 10'0" for those built after 1930. In the period 1924 - 30 the emphasis was on open goods wagons, of the high sided type. A total of 60,000 of this type was built in the period, all having wooden bodies, the majority having wooden underframes also. Mineral wagons were also built in some quantity, 21,000 to a standard R.C.H. type with wooden body and underframe 16'6" long being built. The third highest total was achieved by the covered goods vans, these all had steel underframes, the majority having wooden bodies, though some steel bodied examples appeared, while corrugated steel ends also featured on much of the construction 11,770 covered goods were produced during the period, and the three types mentioned above, thus accounted for 92,770 out of the total production of 106,000. The remaining wagons built during this early period can be summarised as follows:-

Brake Vans	1,800	Banana Vans	1000
Beer Vans	100	Cattle Wagons	4385
Deal Wagons	150	Double Bolster	1600
Gunpowder Vans	75	Hooper Wagons	825
Plate Wagons	600	Refrigerator Vans	750
Meat Vans	500	Tube Wagons	250
Special Wagons	541	Tank Wagons	31

It is of interest to note, that the LMS built no further meat or refrigeration vans after 1930, their duties being largely taken over by containers. Whilst of the other types, the beer vans also represent total LMS production, and only 100 more banana vans were produced, these appearing in 1946. The majority of the wagons built in this early period, showed little improvement over their late pre-grouping predecessors, and indeed as has already been noted some were merely up-dated versions of earlier designs, many of them having wooden underframes. The open goods and mineral wagons were provided only with simple hand-brakes, while among the remaining types vacuum brakes were only fitted to a relatively small number of vehicles.

After 1930 most of the wagons built were to

an improved standard, and thus made up in quality what they lacked in quantity. Steel underframes were much more widely used, whilst vacuum fitted wagons formed a larger proportion of the total, even so unfitted wagons continued to be built up to 1947. In contrast to the earlier period, 1931-47 saw only 32,000 open goods wagons added to stock, these were of high, medium and low sided types and all had a 10'0" wheelbase. Covered goods vans built in the same period were also of 10'0" wheelbase and totalled 31,220 thus almost equalling the open variety, though over the whole period the totals were still two to one in favour of the latter. A further, 16,650 mineral wagons were also added to stock, the majority being of the same type as those built 1924-30, though in 1947 the LMS version of the 16 ton all steel wagon appeared some 2,600 being built in the last two years before nationalisation.

The remaining wagons built between 1931-47 can again be summarised as follows:-

Brake Vans	2700	Banana Vans	100
Ballast Wagons	3160	Cattle Wagons	900
Deal Wagons	100	Double Bolsters	1400
Gunpowder Vans	125	Hooper Wagons	2088
Loco Coal	1594	Plate Wagons	2125
Sand Wagons	100	Sleeper Wagons	459
Single Bolsters	1412	Special Wagons	725
Tank Wagons	14	Tube Wagons	1500

All of the brake vans built for normal service at the LMS had a weight of 20 tons, those built before 1938 being 20'0" long and a 12'0" wheelbase. In 1933 an intermediate type having the same length but on 14'0" wheelbase appeared, these being followed in 1934 by the final types which were 24'0" long on a 16'0" wheelbase, several variations in design being encountered, the final one of which was perpetuated by B.R. for some time.

The last cattle wagons built by the LMS appeared in 1935, all apart from the last lot having wooden underframes. Those built between 1924-34 being 19'1" long on an 11'0" wheelbase, while the last type built in 1935 were 18'6" long on a steel underframe, having the same wheelbase as the earlier types.

The remaining wagons while numerically forming a small percentage of the total, were of a great many different types. Most of the vans for such traffic as Bananas etc. were of very similar appearance to the covered goods. While the open vehicles such as tube and plate wagons were similar to the open goods though of considerably greater length. Among the more specialised wagons may be mentioned the 40 ton Hopper Coal Wagons for the LMS power station at Stonebridge Park, while among the wagons classed by the LMS as "special" several very large trollies were built, the largest of which had a carrying capacity of 120 tons.

The previous articles gave details of how many wagons the LMS owned. In this session we want to see how the LMS used that stock, what kind of services it ran and what an LMS goods train looked like. But first of all there are three general points on wagon stock.

General

1. The LMS freight train consisted of every-one's wagons. Almost all general service wagons were common user. By 1933 the list of NON COMMON USER wagons had been whittled down to:
 - (a) Wagons exceeding 12 tons capacity except enddoor mineral and pig iron.
 - (b) All wagons belonging to Bishop's Castle Railway Felixstowe Dock and Railway Manchester Ship Canal Shropshire and Montgomeryshire Railway
 - (c) All vacuum and Westinghouse piped and fitted wagons.
 - (d) Cask wagons, Deal wagons, Hopper wagons, Twin wagons not fitted with bolsters, Plate, Long Low and tube wagons, Coke wagons.
 - (e) Specially constructed vehicles.
 - (f) Service vehicles.
 - (g) Double Bolster wagons (except SR) and 6 or 8 wheeled bolster wagons.
 - (h) GWR China Clay, Cattle and 20-ton enddoor mineral wagons.
 - (i) Gunpowder Vans, Meat Vans, Refrigeration Vans, Insulated Vans, Banana Vans.

The list is formidable but in practice the numbers involved were not great especially since the LMS and LNE had a private arrangement making their fitted covered vans common user between themselves. As from 1st March, 1941, virtually all wagons other than special vehicles became common user.

Apart from this non-common user wagons could still be back loaded to:

- (i) Stations on the owning line;
- (ii) Stations beyond (but via) the owning line;
- (iii) Stations on an Intermediate company's route on a direct route home.

For all these reasons there was a good mixture of wagons on almost any LMS freight train.

2. Vacuum fitted wagons were comparatively rare beasts by today's standards. At nationalisation the relevant figures were:-

<u>Company</u>	<u>No. of fitted wagons</u>
LMS	39,039
LNE	59,964
GWR	23,776
SR	6,912
	129,691

This was out of a total of 1,223,634 wagons or just about 1 in 10.

3. In 1939 there were also some 583,789 requisitioned private owner wagons (plus 21,310 not requisitioned mainly tankers) allowed to run on British Railways. Just how many would be on the LMS we do not know. The only indications I have been able to get are some returns of privately owned wagons stopped for repair. If we take these as a (very) rough guide then they give

	<u>P.O. Wagons stopped for repair</u>	<u>Assumed total of P.O. wagons on each railway</u>
	No.	%
GWR	4,929	35
LMS	4,159	29
LNE	3,861	27
SR	1,225	9
	14,174	--TOTALS--
		583,789

The repair figures are from Railway Executive Committee minutes and cover the period 8/11/39 to 28/2/40.

LMS

The average LMS freight train in 1938 consisted of 33.68 wagons, 22.98 loaded and 10.70 empty. It travelled an average of 8.88 miles per hour including time spent in loops, under examination, waiting for paths etc.

These figures are a little misleading, put as bald statements just like that because on most lines where traffic warranted it mineral traffic and corresponding returned empty wagons ran separately from merchandise traffic. In

reality LMS freight trains could be grouped as follows:-

1. Local freights, stopping freights, pick up freights and such like. A very mixed bag, also covering trip workings and inter-yard workings these latter two being much more common than the pick-up goods so beloved of railway modellers. All could produce a very varied assortment of stock and motive power.
2. Mineral trains. The classic LMS train could load up to 70 wagons. For example, in 1938 the LMS brought 2,712,000 tons of coal into London alone. This is about 1,000 wagons per weekday with corresponding empties. Signalled as Class 8 but empties were often signalled as Class 5 Express Freight.
3. Merchandise trains. Most LMS merchandise traffic was between large centres and was thus concentrated into through freight trains and Express Freight trains. The various classes of merchandise freight train were -
 - 3.1. FF1 - No. 1 Fully fitted. No. 4 headlights. Max. 50 wagons and brake. All wagons piped at least and vacuum brake had to operate on not less than half, all had to have screw or instanter couplings and oil boxes. In 1934 there were 40 FF1s run daily on the LMS.
 - 3.2. FF2 - No. 2 Fully fitted. No. 4 headlights and could load to a maximum of 55 wagons and brake. Automatic brake must operate on not less than ONE THIRD the wagons which must have screw or instanter couplings. All wagons must have oil axle boxes. In 1934, the LMS ran 97 FF2s daily.
 - 3.3. Express freight (Maltese Cross). Class 5 headlights and signalled 2-2-3. Must have four vacuum braked vehicles connected to the engine and all wagons had to have oil boxes. In 1934 again the LMS ran 147 Maltese Cross trains.

- 3.4. Express Freight - signalled 3-2. Had to have oil boxes on all wagons. Even so, the term Express was decidedly relative. For example, in 1946 the 6.35 p.m. Express Freight from Edge Hill to Copley Hill did not reach Edgeley Junction until 8.36 p.m. - an average of 17½ m.p.h.!
- 3.5. Through Freight. Class 5 headlights and about all one could say was that it was slower than an express freight. As an example, again in 1946, the 4.25 p.m. through Freight train from Crewe was due at Nuneaton (T.V) at 9.56 p.m. giving an average speed of 10.9 m.p.h.

The through freight and the express freight were really the backbone of the LMS goods service. Many lines saw nothing more important than a sole Maltese Cross freight per day.

To give some idea of the volume of traffic on the various divisions here are the wagon mile figures for 1938 - In Millions of wagon miles.

	<u>Western</u>	<u>Central</u>	<u>Midland</u>	<u>Northern</u>	<u>Total</u>
Merchandise (Classes 7-21)	316	62	254	151	783
Minerals & Merchandise (Classes 1-6)	57	7	56	22	142
Coal etc. Empty	91	45	178	38	352
	196	58	261	79	594
<u>TOTAL</u> of age loaded	70.30	66.21	65.18	72.69	1,871 68.24

Finally, it is interesting to compare the freight train performance of the various divisions. The figures for 1938 are in train miles per train hour.

	<u>Miles</u>
Western Division	8.94
Central	8.83
Midland	7.71
Northern	12.41
Line	8.88

Despite this seemingly poor performance, the LMS could still claim that ... "By 1933, 70 per cent of the freight consignments forwarded were delivered on the day after despatch and 94 per cent by the second day."

In modern terms, the LMS freight service put up a performance equal to First Class letter post!

SUMMARY

The average LMS freight train, assuming such a thing existed would be about 30-40 wagons and brake van. It would be 0-6-0 or 0-8-0 hauled and would break few speed records. It would be either a mineral or empty mineral train or a through freight.

Finally, despite all that my good friends will tell you later and despite all the glamour associated with passenger services do not for one moment forget the position of freight traffic on the LMS. In 1938 for example -

Receipts from passenger train traffic -	£22,076,728
" " goods " " -	£36,485,663
Total traffic receipts ...	£63,562,391

Freight was the life blood of the LMS.

BIBLIOGRAPHY

It would be a pleasure to recommend further reading but there is virtually nothing published. Most of the above comes from official publications which were never published in the normal sense of the word and are only available on the odd occasion via second-hand services. There is, therefore, no point in quoting them.

5



BUILDINGS

By the end of the LMS period the majority of stations on the system were those taken over at grouping, few changes were made and few stations were opened. New station building was mostly confined to high density areas, for commuter traffic into the larger cities from the expanding suburbs, in an attempt to combat road traffic. Such examples are to be found on the London, Tilbury and Southend section with the track widening, replacement and opening of new stations in the 1932-1935 period, and on the LNWR main line from Euston with new stations such as Apsley, South Kenton Headstone Lane, Carpenders park (opened first as a Golf course halt later extended for commuter traffic).

The Birmingham, Manchester, Edinburgh and Glasgow areas also saw some expansion of services. The stations opened were not all opulent structures, some were little more than halts with simple timber platforms and small shelters with the minimum of booking office facilities, often no more than a small hut.

Some stations were rebuilt or refurbished to provide better passenger facilities or for easier operation to cut down on staff, e.g. the new booking offices at Crewe c.1937 replaced those on the platforms although this also forms an excellent example of new building designs not being in sympathy with the existing structures. On the other hand the replacement station for the expanding town of Luton in 1938, and many of the larger commuter stations such as Apsley or Elm Park were fine structures in complete harmony with contemporary ideas.

In spite of new building, the total of stations in use declined throughout the LMS period as the following illustrates.

Stations, including those joint with other companies (e.g. Shrewsbury, Hereford, Birkenhead Joint) but excluding those on the following joint lines.

Cheshire Lines	143M 49ch.	LMS Share	1/3
G.C & Midland Jt.	39M 23ch.	LMS	1/2
G.C & NSR J.		LMS	1/2
G.C, H & B M.Rly Jt.	4M 77ch.	LMS	1/3
M.S.J.A.	9M 13ch	LMS	1/2
Methley Joint Line	5M 58ch	LMS	1/3
M & GN Joint	183M 26ch	LMS	1/2
OA & GB JCN	6M 16ch	LMS	1/2
Severn & Wye Joint	41M 6ch	LMS	1/2
Somerset Joint	103M 31ch	LMS	1/2
South Yorkshire Jt.	29M 69ch	LMS	2/5
Whitechapel & Bow	2M 4ch	LMS	1/2

STATIONS	1929	1933	1934	1935	1936	1937	1938
Passenger	2253	2092	2090	2079	2076	2073	2065
Halts	142	139	136	139	145	147	139
Joint	179	166	169	170	170	171	172
TOTAL	2574	2397	2395	2388	2391	2391	2376
Goods	2937	2929	2919	2913	2912	2905	2904
Private Sidings	4241	4143	4106	3928	3804	3770	3728
Stations with Refreshment facilities	116	113	111	111	106	113	114

The above joint lines accounted for an approximate additional 185 stations.

and many stations in connection with Royal Ordnance Factories at the beginning of the war, e.g. Cold Meece, Wilshampstead.

In 1938, LMS passengers made 434,224,863 journeys using two stations (joining and alighting). On average each LMS station was used by 1001 passengers per day (compare this with an average 32,000 a day arrivals in Blackpool in August).

With approaching 3,000 stations it is remarkable that no two were identical. Similarities obviously occurred in two main

Some of the largest LMS Stations:

Name	Total platform lines	Area occupied (acres)	Total length of platforms (feet)
Manchester (Victoria and Exchange)	21	23	13,947
Crewe	16	23	11,394
London (Euston)	15	18	10,776
Preston	15	10 1/2	10,102
Blackpool North	15	13 1/2	9,900
Glasgow (St. Enochs)	12	13 1/2	9,561
Southport (Chapel St.)	13	14 1/2	9,324
Glasgow (Central)	13	13	9,080
Aberdeen Joint	13	11 1/2	11,340

Some stations opened by the LMS

Apsley	Mossspark West
Bowker Vale	Navigation Road
Canley Halt	Shoscombe & Singlehill
Carfin Halt	
Carpanders Park	
Corkerhill	South Kenton
Croftfoot	Squires Gate
Dowlow Halt	Stanlow & Thornton
Elm Park	Stewartby
Gagie	Stourpaine & Durweston Halt
Hillington	Upminster Bridge
	Upney
King's Park	Upton by Chester
Lea Hall	Wedwood Halt
Leire Halt	West Allerton

ways, the first being where the stations built when a line was opened often had characteristics alike, some examples at random.

1. The Leicester to Hitchin line of the Midland Railway, all the stations were originally very much alike.
2. The three intermediate stations on the Bedford to Northampton line were of the same design but built in different materials.
3. The Bedford and Cambridge Railway stations were all similar with additional features such as glass awnings to the two more important stations Sandy and Potton.

4. The "Little" North Western stations had many features in common.

The second way happened when the Companies achieved some measure of standardisation which affected the designs used in later building. Referring again to the Midland Railway, buildings on the Settle-Carlisle have an affinity to those on the Worksop-Mansfield route. Standardisation on the LNWR produced timber station buildings prepared on a modular basis to give facilities required at a particular location. Many of the later goods sheds and ancillary buildings such as weighbridges and stables were prepared to a common theme.

Reference to photographs appearing in published works in the form of albums or to the prototype and modelling magazines will often show stations structures, track layouts, signal boxes and lineside equipment in addition to the usual theme of the picture, the ubiquitous locomotive.

Painting of Stations and Structures

As far as can be ascertained there was no listed schedule for the painting of buildings and structures, to a large extent procedure was left to district officers and local Foremen, following existing procedures using paint colours specified by the Chief Civil Engineers' office.

The L.M.S. had no "official" colour scheme until the mid-1930's, before that pre-group colours were continued. Midland Railway shades in the Eastern Division, L.N.W. colours in the Western and Southern Divisions. The Northern Division (Scotland) seemed to be left alone continuing to use the pre-group livery, at least until the war.

The divisions mentioned are, of course, the Civil Engineers boundaries, Western Division included the old Furness Railway, Lancashire and Yorkshire Railway and North Staffordshire Railway sections and so some changes would inevitably come into these areas much earlier. The Eastern Division was most of the Midland Railway area, though anomalies would arise where the Midland lines crossed the areas of the old LNWR Railway, e.g. the line from Birmingham to Bristol.

It seems that most companies had similar ideas for the painting of stations with, for example on a timber building, the lower half, to dado level, a dark colour usually a brown (or madder lake on the NSR) and the upper part a light colour, buff to cream. Variations obviously occurred when a station would be painted all one basic colour, light or dark

and so when giving colour details it must be a generalisation. Much of the detail work being left to the Foreman on the job led to variations along a line when the stations were being redecorated depending on material available. Colour also was not always constant as paint was mixed on site from raw materials with pigments added, although quantities were laid down by "head office", matching a colour could depend on the "eye" of the Foreman.

From the mid-1930's, the colours designated for station painting were

Middle Brown
Venetian Red
Mid-Brunswick Green
Deep Cream
Portland Stone

one dark colour paired with one light colour. In addition Golden Brown was used on stations on electrified lines, either alone or with Deep cream, to counteract the effects of "Electric Dust".

Green was retained for the truly bucolic stations.

LNWR colours used on stations and signal boxes were

Cream (Light Stone)
Light Brown (Golden Brown) and
Dark Brown (Middle Brown)

The Midland Railway for stations used chocolate and cream (milky, with little yellow) with maroon doors. Iron work to doors was black. Iron work for roof and awnings was cream except for chocolate dado to columns. Signal boxes were venetian red and lemon chrome (the venetian red was more like the LMS dark brown than the LMS venetian red. The lemon chrome is often referred to as banana yellow).

Highland Railway Colours. Stations and signal boxes from the ground to 3'6" Burnt Sienna from 3'6" upwards cream (called "Stone") doors and frames, outer window frames, down spouts, guttering were purple brown. Window frames and sashbars white, water colours, burnt sienna, cream and a purple brown cap.

Notices and Nameboards, burnt sienna, letters and edging on a white board, goods sheds were creosoted timber. Corrugated iron roofs to shelters and some SBs were Red oxide.

Caledonian Railway colours were purple brown and light brown with white window frames. It is believed that G & SWR areas had these colours also.

Nameboards, Signs and Notices

Some Notes

Many stations retained pre-group nameboards and notices for many years, some well into B.R. times. The majority of nameboards were quite large usually with raised letters painted white on a black board with white edging. Letters used on the LNWR, MR, LY, FR with san serif, those on the NSR serif.

The Midland Railway used angled nameboards (MRN Apl 1965 P133, RM June 1971 P184.194). These originally had white letters on an Oxford blue ground. The date of which Eastern division would change the blue for black is not known.

Enamelled iron notices such as "Cross the line by the Bridge" with white letters on blue remained in place on many Midland and C.R. stations.

After experimenting with colours and signs the LMS chose the "Hawkeseye" target type nameboard as standard in the 1930's, these had raised 4" san serif letters painted black with a golden yellow beaded glass background, to reflect light, within a black border, the whole usually mounted on an off white panel placed within a creosoted frame (see MRN Nov. 1970 P592).

Small enamelled black and yellow signs affixed to station lamps were introduced at this time but were not universally adopted.

In the 1930's the experimentation with black and yellow was carried out on existing pre-group signs but the practice is not believed to have been widespread.

It was normal for warning notices, trespass boards, information signs, poster boards etc. to be painted black with white letters and edging (for poster boards see MRC Nov. 1970, P369).

Bearing in mind the above, relates to usual practice there were occasions when the colours were reversed, black letters on white, blue letters on white though Hawkeseye signs remained black on yellow until repainted BR Regional colours.

Signal box nameboards were standardised to give white letters on a black board with white edging.

The painting of LMS Signal Boxes was standardised by Mr. Bound in his engineering serials, the colours were specified as Light Stone and

Dark Brown. In Serial No. 9 of 1931 doors, guttering water pipes fascia boards, barge boards and staircase were dark brown, window frames and sash bars white and the rest of the wood work light stone. It was agreed with the Chief Civil Engineer that signal boxes at stations should be painted as part of the station and buildings. Though this was cancelled in 1933 when the signal and Telegraph Department took over the whole of the painting work of signal boxes unless specially arranged between divisional Engineers of respective departments.

Serial No. 48 of 1933 although not altering the "colours" to be used now referred to the "British Standard Shade" number of 1930. Painting of certain features was changed now, additions to the 1931 serial being the corner posts, bottom sills, closet if on the ground, window cleaning stage to be painted Dark Brown.

Inside the boxes to dado level was dark brown and above to top of wall plate light stone with remainder including sashes and roofing white. The doors and opening windows, where finger marks were likely to occur, to be brown.

This schedule continued until changed by BR in 1951, although during the War period signal boxes which had been repaired or replaced or had become badly deteriorated were painted grey.

COLOURS	BS 381C	BS 2660	BS 4800	Munsell Reference
	(BRACKETS INDICATE AN APPROXIMATE MATCH ONLY)			
Mid-Brunswick Green	226	6074	14C 39	2.5E 2.5/4
Deep Cream (LMS)	353			2.5Y 8/12
Lemon Chrome (MR)	(354 Add Grey)	(4.057)	(10 D 43)	2.5Y to 7/10 5Y
Light Stone (LMS) Cream (LNWR)	361	3043	(08 C35 Add Grey)	1Y 6.5/5
Portland Stone (LMS)	364	(4.047)		(5Y 8/2)
Middle Brown (LMS) Dark Brown (LNWR)	411	3045	06° C39	7.SYR 3/6
Dark Brown (LMS) Venetian Red (MR)	412	(3039)	(08 B29)	5YR 2/4
Golden Brown (LMS) Light Brown (LNW)	414	3044	---	5YR 4/8
Venetian Red (LMS)	445	---	---	10R 3/8
Madder Lake (NSR)	---	0.007	---	2.5R 3.5/12

In spite of this known examples did occur, e.g. on the central Wales line, where signal boxes were painted green and cream in 1937!

Bridges

Metal bridges were usually painted dark grey (over red oxide and bitumen undercoats) although it is known that some plate girder bridges were a cream colour.

Bibliography

A few, but not exhaustive, selection for further reading:
 Victorian Stations by Gordon Biddle (David & Charles)
 An Introduction to Railway Architecture by Christian Barman (London: Art and Technics: 1950)
 Index to Model Railway Drawings by S.A. Leleux (Oakwood Press)
 Some articles for particular interest from recent Modelling Magazines.

Model Railway News and Model Railways

MNR	April 1965	p.133	M. Railway Angled Nameboards
MNR	Nov. 1970	p.592	LMS Hawkeseye Nameboards
MNR	1968-1969		Various articles on L & Y structures
MR	June 1973	p.292	M.Railway signal box development
	Aug. 1973	p.404	M.Railway and F.Railway loading gauges
	Oct. 1973	p.503	Goods Warehouses
		p.509	M.Railway Sta. Derby Manchester Line
		p.514	L & Y Timber waiting rooms
	Dec. 1973	p.619	LNWR SBs and Modifications to "Prototype" kits
MR			"LMS Lineside" since February 1976
No.1	Sept. 1974	p.452	Signal Box Nameboards MR & LMS
2	Oct. 1974	p.495	LNW Timber SBs and "Prototype" kits
3	Nov. 1974	p.560	MR Platform Indicator
4	Dec. 1974	p.596	MR Drinking water fountain
5	Jan. 1975	p. 34	LY Sta. Nameboard and LMS small nameboard with some details of Hebden Bridge
6	Feb. 1975	p. 72	SB Bunkers and toilets
7	April 1975	p.174	Barrows trucks and buffet cars
8	June 1975	p.280	MR Footbridges and Bridge No. plates
9	July 1975	p.348	Platform trolleys
10	Aug. 1975	p.392	FR & MR Jt. Buildings and track plans
11	Oct. 1975	p.513	LMS Prefab E.S. (Silcocks)
12	Jan. 1976	p. 28	LNWR Stables
13	Feb. 1976	p. 84	Concrete warning sign

Model Railway Constructor

Nov. 1970	p.369	LMS Poster boards
June 1973	p.202	LNWR SBs
Dec. 1973	p.462	LNWR Sbs postscript

Railway Modeller

Nov. 1963	p.263	Modelling Midland Buildings
March 1970	p.84	C.Railway Notice boards Liveries etc.
April 1970	p.112	C.Railway Stations and SBs
May 1970	p.148	C.Railway SBs Footbridges etc.
June 1971	p.184	M.Railway Angled Nameboards.
Sept.1972	p.291	NS.Railway station nameboards
Dec. 1972	p.383	LY SB. nameboard
Jan. 1973	p.12	CLC Sta. nameboard
Sept. 1973	p.282	MR Stone Goods Shed
March 1974	p. 74	C.Railway SBs

The following facts are included bearing in mind that they represent the situation at the time the LMS existed, certain alterations have taken place since nationalisation.

Bridges

The dictionary defines a bridge simply as "a structure thrown over a body of water, a ravine, another road etc.", but to members of the Engineering Department staff the word has a much more complex meaning.

The LMS maintained no fewer than 28,000 Bridges - without counting culverts - and amongst them were bridges of all sizes from the great viaducts to the humble "cattle creep". Of this number 17,500 were under bridges (i.e. carrying the railway) and 10,500 are over bridges.

They included bridges over roads, canals and rivers, flood openings, occupation bridges, foot bridges, aqueducts, intersections of railways tunnels etc. and between them they represented practically every known type of construction from the familiar brick and stone arch, through the many varieties of girder bridge, to more specialised structures such as rolling lift bridges and cantilever bridges.

LARGEST STATIONS

Western Division

Euston, 15 platforms, varying from 400 to 1,030 ft. long. Station premises cover an area of 18 acres. Victoria Station, Manchester, covers an area of 14½ acres, and has 17 platforms, one of which (No. 11 platform) is 2,194 ft. long. Amongst other large stations may be noted Lime Street, Liverpool; New Street, Birmingham; Rugby; Crewe; Manchester (London Road and Exchange); Preston; Holyhead; Chester (Joint); Liverpool (Exchange); Southport (Chapel Street); Blackpool (Central and Talbot Road); Stoke-on-Trent.

Midland Division

St. Pancras, London, with the Hotel designed by the late Sir Gilbert Scott, is by far the most striking of the London railway stations, the station itself being the largest in the kingdom under a single span roof (9 acres). It contains 7 platforms, 800 ft. in length, and 10 sets of rails. Other large principal

passenger stations are Bedford, Leicester, Derby, Nottingham, Burton-on-Trent, Cheltenham, Gloucester, Bristol, Sheffield, Leeds, Bradford, Keighley, Skipton, Manchester (Central), Liverpool (Central), Luton, Morecambe, Buxton, Heysham Harbour, Tilbury and Southend.

Northern Division

Glasgow Central (17 platforms, high and low level); St. Enoch, Glasgow (12 platforms and 14 roads); (it covers over 13½ acres of ground); Inverness (8 platforms and 9 roads). Other large stations are Carlisle, Edinburgh (Princess Street), Glasgow (Buchanan Street), Aberdeen, Perth, Gleneagles, Dundee (West), Oban, Stirling, Larbert, Hamilton, Motherwell, Carstairs, Ardrossan, Greanock, Gourock, Wemyss Bay, Eglinton Street, Paisley, Elderslie, Greenock (Princess Pier), Dalry, Kilmarnock, Dumfries, Kilwinning, Ayr, Girvan, Stranraer, Largs, Aviemore, Dingwall and Forres.

TOTAL LENGTH OF PLATFORM FACES at which trains can come alongside of the largest stations - Grewe, 11,394 ft. (No. 1 down platform is 1,510 ft. in length); Euston, 10,776 ft.; Citadel Station, Carlisle, 6,987 ft.; Willesden (Low Level), 6,234 ft.; and Rugby, 5,478 ft. (the up main platform is 1,415 ft. long); Manchester (Victoria), 13,965 ft., longest platform 2,194 ft.; Southport (Chapel Street), general platforms, 7,221 ft.; excursion platforms, 2,078 ft.; Liverpool (Exchange), 6,406 ft.; Blackpool (Talbot Road), excursion platforms, 6,295 ft.; general platforms, 3,605 ft.; Rochdale, 6,126 ft.; Blackburn, 6,080 ft.; Blackpool (Central), excursion platforms, 5,032 ft.; general platforms, 3,998 ft., Bradford, 4,742 ft.; Bolton, 4,205 ft.; Halifax, 3,153 ft.; Wakefield, 2,100 ft.; St. Pancras, 5,092 ft.; Derby, 5,862 ft.; Nottingham, 5,720 ft.; Sheffield, 7,880 ft., Leicester, 3,760 ft.; Glasgow (Central), 8,840 ft.; Edinburgh (Princess Street), 4,140 ft.; Perth General, 7,700 ft.; Aberdeen (Joint), 11,340 ft.; Barking 5,470 ft.; Broad Street, 4,545 ft.; Southend, 4,325 ft.; Tilbury, 3,800 ft.; St. Enoch (Glasgow), 9,561 ft.; Inverness, 5,600 ft.; Chester (Joint), 7,307 ft.; longest platform, down main, 1,340 ft.; Longsight, Manchester, excursion platform for Belle Vue Gardens, 1,750 ft. long; Preston, 10,102 ft. up platform, No. 6 is 1,253 ft. long.

IMPORTANT BRIDGES, VIADUCTS AND ENGINEERING WORKS

Britannia Bridge, Menai Straits, tubular girders, with two spans of 460 ft. each and two spans of 230 ft. each, clear height from high-water level of spring tides to the underside of the tubes being 103 ft. 9 ins. Runcorn Bridge, over the Mersey, consisting of open lattice girders, with three spans of 305 ft. each, clear height above high-water being 75 ft.; this bridge is approached on each side by viaducts, having a total length of about half a mile. The roof over Lime Street station, Liverpool, varying spans of from 219 ft. to 166 ft. and an average length of about 620 ft. The roof over New Street station, Birmingham, span 209 ft. and average length about 840 ft. Lockwood, Denby Dale, Wyke, Conisbrough, Kent, Leven, Duddon and Eskmeals viaducts. Clyde Bridges, Glasgow; Bridge over Forth near Alloa. Bridge over Forth at Stirling; Bridge over Tay near Cargill; Bridge over Tay at Perth; Viaduct over North Esk at Marykirk; Dee Viaduct, Aberdeen, Broomhill Viaduct, Larkhall (the highest viaduct in Scotland); Camp Viaduct, Motherwell; Braidhurst Viaduct, Motherwell; Nethan Viaduct, Tillietudlem; Connel Ferry Bridge over Loch Etive (Ballachulish Branch); Avon Viaduct, Stonehouse; Ballochmyle Viaduct, Stone Arch 180 ft. span 90 ft. rise, Mauchline. Lochans Viaduct, between Stranraer and Colfin; Big Fleet and Little Fleet Viaducts, between Gatehouse and Lochskerrow; Loch Ken Viaduct between New Galloway and Perton; Harringworth 3,900 ft. Viaduct and Greyhound Viaduct (Lancaster); Feteresso Viaduct; Glenury Viaduct; Creagan Bridge, etc.

There are several large and important viaducts on the Highland section, over the Rivers Tay, Tummel, Garry, Spey, Findhorn, Nairn 18,000 ft., Ness, Beaully, Conon, etc. but the principal are those on the direct line from Aviemore to Inverness. On that section the valley of the River Nairn is spanned by a magnificent structure of old red sandstone, composed of 28 arches of 50 ft. span, and one grand semi-circular arch of 100 ft. span; the total length of viaduct is 600 yards, and the height from river bed to parapet is 135 ft. Twelve miles farther south the line is carried over the valley of the River Findhorn, at a height of 145 ft. above water level, by a handsome viaduct, a quarter of a mile long, composed of 9 spans of steel girders each 130 ft. clear, resting on piers of granite built in cement mortar. At Invershin the railway crosses the Kyle of Sutherland by a handsome viaduct consisting of 5 masonry arches of 30 ft. span and 1 wrought-iron multiple lattice deck span of 230 ft. clear. The level of the rails is 65 ft. above low-water level. There is also a viaduct over the

River Spey between Orton and Mulben, consisting of 5 masonry arches of 29 ft. span, 1 of 27 ft., 1 of 15 ft., and 1 steel Linville truss through span of 230 ft. clear. The top of the main girders is 78 ft. above the bed of the river.

LONGEST TUNNELS

Western Section

Two at Primrose Hill, each for two lines of rails, and 1,182 yards long; two additional single line tunnels have been constructed for electric trains, 1,483 and 1,290 yards long respectively. Kilsby Tunnel, 2,426 yards long. At Liverpool (Edge Hill) is a long tunnel for two lines of rails to the Waterloo goods station, 3,558 yards long, and another to Wapping, 2,100 yards in length. At Standedge, in Yorkshire, four tunnels side by side, two single line, one double line, one for canal, the length of each being about 5,340 yards. At Festiniog, in North Wales, a single line tunnel 3,726 yards long. Morley, 3,369 yards. Halton, 1,920 yards. Summit tunnel between Littleborough and Walsden (2,885 yards). Gildersome, 2,331 yards. Sough, between Entwistle and Spring Vale (2,015 yards). Woolley, between Crigglestone and Haigh (1,745 yards). Bowling, between Low Moor and B adford (1,648 yards). Watford, New, 1,989 yards; Old, 1,817 yards. Thurstonland, between Brockholes and Stocksmoor (1,631 yards). Wyke, between Wyke and Low Moor (1,365 yards). Whitehaven (1,322 yards). Beacon Hill, between Halifax and Hipperholme (1,105 yards). Upholland, between Orrell and Upholland (959 yards). Cumberworth, between Shepley and Denby Dale (906 yards). Melling, 1,230 yards. At Harecastle, there are three tunnels running parallel to each other under Harecastle Hill. The first was built about 1770 for the Trent and Mersey Canal and is only 8 ft. 6 ins. in width and was originally 5 ft. 10 ins. above the water line. The boats were worked through this tunnel by what is called "legging" - that is, the boatmen lay on their backs on the boats and pushed against the roof of the tunnel with their feet. This tunnel is now no longer in use. The second tunnel was built about 1825, and there is a towing-path and boats were horsed through in the ordinary way. A system of haulage by a boat driven by electricity was brought into use on the 1st December, 1914, and owing to a subsidence due to mining, the towing-path is no longer used for horses. The third tunnel for the railway is about seven yards above the level of the other two, and was constructed in 1848. The tunnel at Goldenhill, on the North Staffordshire loop line, is 37 ft. wide, being for three lines of rails.

Midland Section

Totley (between Dore and Totley and Grindleford), 6,230 yards; Disley (between Bugsworth and Hazel Grove), 3,866 yards; Cowburn (between Edale and Chinley), 3,702 yards; Dove Holes (between Peak Forest and Chapel-en-le-Frith), 2,984 yards; Bleamoor (between Ribbleshead and Dent), 2,629 yards; Bradway (between Dronfield and Dore and Totley), 2,027 yards; Corby (between Gretton and Corby), 1,920 yards; Sharnbrook (between Sharnbrook and Irchester), 1,860 yards; Glaston (between Manton and Harringworth), 1,842 yards. Belsize (two tunnels) between Kentish Town and Finchley Road, 1,734 and 1,822 yards respectively; Glenfield (between Glenfield and West Bridge), 1,796 yards (single line); Clay Cross (between Stretton and Clay Cross), 1,784 yards.

North London Section

Hampstead Tunnel, between Finchley Road and Hampstead Heath, 1,350 yards.

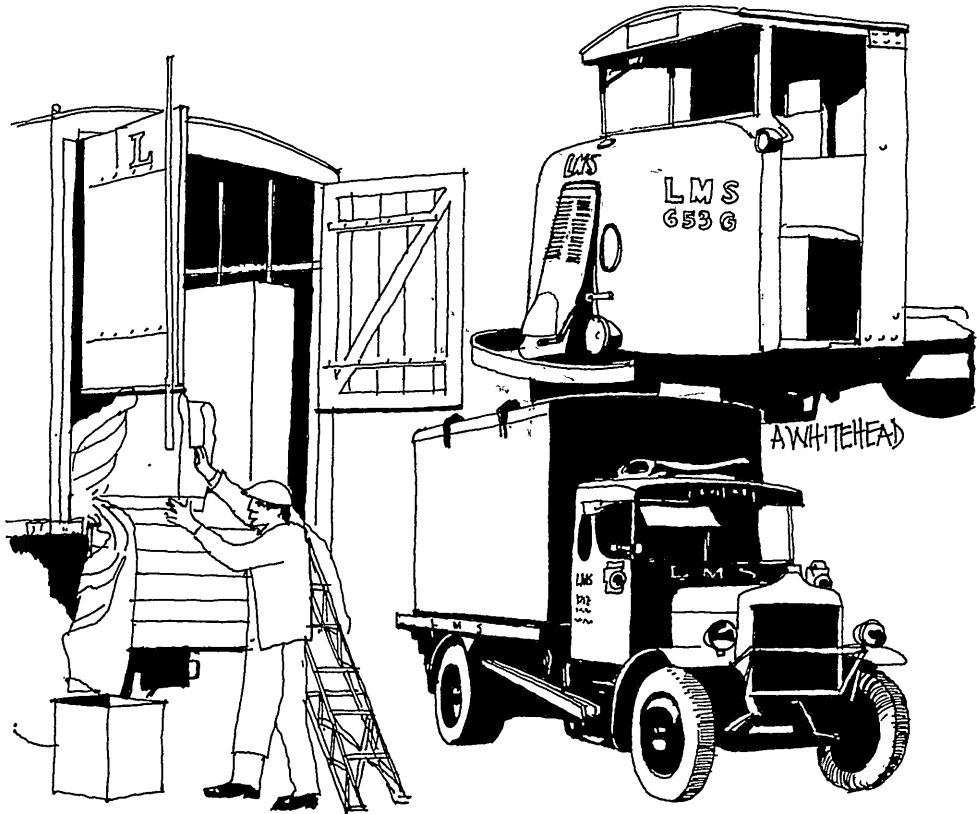
Scottish Division

Between Greenock and Gourrock (2,110½ yards long); Moncrieffe tunnel, Perth (1,214 yards); Drumlanrig (1,397 yards); Mossiel Tunnel (684 yards); Fairlie Tunnel (976 yards); Greenock, two tunnels, Old G. and S.W. and Old Caledonian, (1,260 and 2,112 yards respectively).

LARGEST SIGNAL BOXES

Glasgow, St. Enoch, 542 levers (points manual, signals electric); Glasgow, Central, 374 levers (electro-pneumatic); Euston, 542 levers; Crewe, North, 266 levers (electric); Crewe, South, 247 levers (electric).

6



ROAD VEHICLES

INTRODUCTION

To anybody who can remember the number of railway vehicles on the roads, prior to National Carriers appearance, their presence was so much part of the everyday scene that it was never questioned. Yet how did the railways come to operate a road vehicle fleet.

The original railways had very little thought of doing more than to build and operate the actual railway as defined in their charters and these charters rarely made provision for operating road feeder services. One or two charters and stage coach operators were bought off by contracts giving the exclusive road transport rights from certain stations on the proposed line, the railways receiving in return no opposition when their bill went before Parliament. These contracts usually had no time limit and some only ceased when the whole of transport was nationalised.

Early Road Services

The first manifestation of railway road transport seems to have come about as an attempt to counteract the activities of transport contractors such as Pickfords and Carter Patterson who were making a lucrative business out of using the railways facilities. In brief if you wished to consign goods from A to B then you had to make a contract with every individual railway en route between A and B for the transport of those goods. The transport contractors had regular contracts with all railways and their own men to transship the goods at change points and also a collection and delivery service. This instead of making two or three contracts to get your goods from A to B you could make one contract with a contractor and enjoy also a door to door services. Since the contractors used railway bulk transport rates small lot consignees could even enjoy a cheaper overall rate. The railways could have sensibly retaliated by becoming booking agents for each other but they preferred to defer such an obvious and sensible step until it was forced upon them many years later. They did, however, start their own delivery and collection service either with their own staff and vehicles or with sub-contractors. Thus railway road services were born probably illegally, i.e. operated by companies not authorised to operate them, but unchallenged because no body was strong enough to challenge them. Some of the later railways incorporated road vehicle operation in their charter and some road services

were authorised in retrospect but it would take a lot of research and a good legal eagle to know which was which at grouping.

First Mechanical Services

Initially services were either horse or manpowered but the major railways sampled early mechanised transport in a way that suggests that they had an eye as to their future potential. If it had not been for the 1st World War then I feel that the railways would have absorbed and integrated road transport as it developed. Unfortunately, the War intervened and caused three things to happen simultaneously or virtually so. First it financially crippled the railways so that they had no reserves to invest in extended road services post war, it proved the reliability of mechanical road vehicles and provided them cheaply as W.D. surplus, and finally provided a large number of men trained and practised in the skills of driving and maintaining these vehicles. Thus at the moment of the railways greatest weakness the road transport industry got its start.

The railways did expand rapidly their mechanised fleets of vehicles and in 1929 they had a Bill passed through Parliament authorising the LMS to operate independent as opposed to feeder road services. This Bill was passed with much opposition from the road transport lobby but did act as a pilot Bill for another Bill within the year which granted similar powers to the other railways.

Bus Service

The main manifestation of this Act was that the LMS started operating stage bus services mainly in North Wales and around the Clyde estuary. Some of these services were operated by LMS vehicles and thereby LMS subsidiaries and then by the LMS again. Eventually they were all taken over by bus operators in which the LMS had a substantial share holding. There were also LMS operated freight equivalents to bus services. A lorry would travel along a given route on certain days of the week and collect and deliver goods to all points on that route. This was always in rural areas and must have been a most useful service in the thirties.

Road Transport Competition

The LMS did much to both improve the efficiency and exploit the potential of its road services but they were always operated at a loss. This was a matter of policy, an attempt to retain railway customers. The idea being that if they under cut their rivals on delivery and collection services then road transport contractors would not have the chance to undercut the railways rate for the whole journey. No doubt this policy had some effect if only in delaying the inroads made into rail traffic by road transport.

The railways provided several services in an effort to combat the road transport competition which would not have been possible if they had not had their own road vehicles. The most important of these was to provide railway staffed warehouse facilities and a delivery service to a ten mile radius of these warehouses. The warehouses could be anything from a full multi-storey traditional warehouse to a grounded van body. All the company using these facilities had to do was provide a salesman who handed a copy of his orders to the railways staff who arranged delivery from the stocks that were held in the railway warehouse. Other services were the provision of mobile mechanical loading plant when such things were unusual, and undertaking the complete transport arrangements for such things as agricultural shows and livestock markets. The LMS were not short of ideas and schemes to attract fresh business in the thirties and most of these schemes involved road transport. Perhaps one of the more amusing was the provision of a Rolls Royce publicity van which toured the country advertising the delights of various holiday resorts.

Early Commercial Vehicles

Before getting involved with the activities of the Road Motor Department, it is necessary in order to set the scene to look at the commercial vehicle industry as it was in the first quarter of this century. Steam vehicle manufacturers tended to supply complete vehicles but the manufacturers of petrol and battery electric propelled vehicles tended to supply only the "Works", that is chassis, engine, transmission, wheels, springing, steering etc., the body work being provided by a body building firm to the customers' specifications. These bodies were usually wood sheeting on a wood framework with the minimum of ironwork usually just hinges, locks and odd bits of strapping.

Prior to the first World War steam vehicles were reliable but only suitable for heavy work. Battery electric vehicles were again reliable but slow. For city work with streets clogged with horse traffic speed was none too important and battery electric vehicles of 15 cwt. to 5 ton capacity were popular with railways for short haul delivery and collection services. Petrol vehicles tended to be an unknown quantity as regard reliability. The best were good but the trouble was finding out which were the best. The production of goods vehicle "Works" was an easy task for any engineering firm while some hit on a sound design, others did not and there was insufficient quantity production anywhere to sort out the good from the bad.

First Railway Operated Vehicles

Now the railways were interested and the wonder is that they did not set up their own works to produce the "Works" for their own vehicles. They certainly had a rooted objection to buying in anything other than raw materials, but they did not, and contented themselves by cutting out the body builders and building their own bodies in the carriage and wagon workshops. Before long the design and production of road vehicle bodies and the purchasing of suitable chassis became a department in its own right, with its own organisation headed by a chief engineer. The chief engineers were probably trying to find a safe formula so that they could produce their own works when the first World War broke out. This was a tremendous boon to the manufacturers of sound commercial vehicles as the War proved their designs, eliminated the competition from unreliable designs and provided the market for quantity production which cut the unit cost to a figure so low that no organisation starting from scratch could hope to be competitive. Thus at the end of the War the chief road motor engineers of the various railways had

lost all hope of producing their own machines but had a wide choice of battle proved designs available for purchase. Post War purchases were mainly petrol engined vehicles with a few battery electric vehicles more or less to utilise battery charging plants and only the L&Y purchased any quantity of steamers.

The road motor engineer's responsibilities were not confined to purchasing vehicles, providing bodies and then servicing them, he had also to solve various problems that were caused by railways operating road vehicles. The main problem as always was getting a satisfactory return on investment. Now the road vehicles were designed with the idea of long haul work being important and the railways had a lot of short haul-frequent stops work. This meant that the substantial investment in a motorised vehicle was not being used for most of the time. The vehicles spent more time being loaded and unloaded than moving. There were two ingenious solutions to this problem in pre-group days by the Midland and the L&Y. The Midlands solution was to provide separate drays for battery electric chassis. The drays had four legs like a table and at the foot of each leg there was a wheel which could be pinned in either the up or the down position. The chassis was provided with a parallelogram lift and the sequence of operations was thus - load dray, chassis backs under dray, lifts dray, dray wheels, pinned up dray dropped in position on chassis, combined vehicle carries out deliveries and collection service, returns to depot, drops off dray for unloading and immediately picks up another loaded dray. Thus the expensive powered chassis was not kept hanging about while loading or unloading took place in the depot. The L&Y solution again involved separate drays but this time the drays were mounted on rollers which located in pairs of channels on the lorry chassis and on some specially fitted drone horse drawn chassis. The operation sequence was:- load dray while stood on horse chassis, move unit from loading bay if necessary by horse, line up lorry chassis and winch dray by hand onto lorry chassis, lock dray in place with catch and commence delivery and collection service, return to depot, transfer dray to drone chassis and pick up loaded dray. This sounds a little more complex than the Midland scheme but in practice proved to be more popular being adopted by the LNWR, ISWR and other railways and being perpetuated by the LMS and remaining in operation up to the end of the thirties.

LMS Road Vehicles Types

On the formation of the LMS it could be expected that one of the road motor organisations of the constituents would take charge of the LMS road motor department. There were

three constituents which by volume of experience were qualified to take over: Midland, L&Y, and LNWR. To judge by the vehicle body designs in production just prior to grouping the L&Y and LNWR were both about equal. Both had mounted vehicle cabs constructed of wood sheeting with glazed windscreen, quarter lights and rear screen and with half cab doors. The Midland's design on the other hand could best be described as a double width night watchmans hut with canvas top. Of course the Midland team took over and the early LMS road vehicles mounted Midland type cabs. The LNWR did, however, have one of its practices adopted and that was dividing the fleet up into functional types and giving each type a separate fleet number series complete with a suffix letter to indicate which group the vehicle belonged. The details of these suffix letters are given below.

- (A) Steam propelled vehicles.
- (B) Petrol (later diesel) propelled vehicles mounting goods bodies i.e. flats, sided, goods vans, livestock vehicles, tip lorries etc.
- (C) Personnel transport, works buses, cars for officials etc. The fleet number was not usually painted on the vehicle but somewhere inside would be a small oval plate bearing the number.
- (D) Delivery vans for express parcels work.
- (E) Electric vehicles.
- (G) Mechanical horses.
- (GT) Trailers for mechanical horses, the GT was not always painted on.
- (S) Service vehicles, i.e. non-revenue earning vehicles for road use such as publicity vans.
- (T) Trailers (not semi-trailers but full trailers for towing behind lorries or tractors).
- (X) Internal use only vehicles not used on public roads, mobile cranes, drone mechanical horses and the like.

Obviously the LMS inherited from the constituents a wide variety of vehicle makes. In the light range there were a substantial quantity of second type Ford T commercials from L&Y, LNWR and Midland and the LNWR and Midland had both made substantial purchases of Karrier 2 to 5 ton vehicles which formed a nucleus of a standardised fleet. The other significant pre-group acquisition was a substantial number of Leyland RAF type lorries from the L&Y some of which lasted in a rebuilt

form to be taken over by B.R. The LMS initial purchases were Fords, Karriers and some heavy ADC's (AEC's sold by Daimler) subsequent purchases were made from most, if not all, commercial vehicle manufacturers but at various eras some manufacturers were less popular than others. The advent of Morris Commercial and a buy British campaign led to the replacement of Fords in the lighter vehicle groups by Morris Commercial and the production of vehicles specially designed for railway use by Dennis in the mid-thirties challenged but did not beat the almost universal LMS Morris Commercial light fleet. Karriers remained in favour throughout the LMS era but lost out to Albion in the heavier range. The giants Leyland and the AEC hardly had a look in but some off beat manufacturers were purchased in useful quantities, hatch, tractors, Jowett 15 cwt. vans and Reliant 5 cwt. three wheel vans. The Reliant vans seem to have been mainly allocated as low shed runabouts and most suffered an early and violent demise.

For modelling purposes the table below shows the typical sort of vehicles likely to be seen in the various periods.

YEAR	LIGHT (under 2-ton)	MEDIUM (2 to 4 ton)	HEAVY (4 ton plus)
1925	Ford T	Karrier	Karrier ADC
1930	Morris Commercial Ford T	Karrier Ford A	Karrier ADC Albion
1935	Morris Commercial Dennis	Karrier Scammel mech. horse Morris Com.	Albion Karrier ADC
1940	Morris Commercial Dennis Karrier	Karrier Dennis Morris Com. Scammel mech. horse	Albion Karrier ADC

Post 1940 anything going was purchased which led to new makes being taken into the fleet. The 'buses of the second World War also diminished the numbers of the old stalwarts like the heavy ADC's and Karriers so for the short period post-1945 the typical vehicles would be as 1940 but without the pre-1930 vehicles.

Design Development

As has been previously stated the 1923 LMS vehicles were identical to the primitive Midland vehicles and continued as such for the next four or five years the comment of a crew transferred from a more or less weather

proof L&Y or LNWR vehicle into a new open LMS vehicle must have been colourful in the extreme. This must eventually have filtered back to Derby because in the late twenties they started fitting windscreens. It is probably that they also supplied a conversion kit to convert existing models up to the new standards by the local maintenance depots. However, even in their final form the Derby designed LMS vehicles still looked Midland and archaic. Fortunately, Derby was pressed for space and the road motor centre was transferred to Wolverton where it remained until the end. The transfer took place about 1930 and there was an immediate transformation of all new LMS vehicles. The new cabs fitted were slight improvements of the LNWR designs which were soon updated by the provision of full height cab doors. This remained the standard design as long as standard cabs were being fitted to commercial chassis. Towards the end when most commercial vehicles were following the car style of "Stream-lining" the sloped back lines of the manufacturer and the very upright lines of the Wolverton cab conflicted rather badly but on the whole the Wolverton cab sat very well on most chassis. So far as lorry cabs were concerned both the Midland and the Wolverton style were altered as little as possible from the standard to suit the various chassis.

When the heavier lorries came with driver's fittings set too far to the offside to suit the standard 4'6" wide cab, then the cab was offset to the offside to accommodate these fittings. There was one set of cabs which were neither Derby nor Wolverton standard designs, but if anything favoured the later L&Y designs. These were fitted to the ADC's and Leyland RAF types when they were completely rebuilt in the early thirties and provided with electric lighting, new wheels and pneumatic tyres.

Of course, during the twenties and thirties the vehicle manufacturers had made advances in vehicle designs both mechanical and otherwise. The most visually obvious advance was the provision of the pressed steel cab which was both cheaper and lighter than the wooden cab. In 1920 practically only Ford offered commercial vehicles complete with cabs but by 1940 practically no body offered a commercial without a cab. The LMS held out for a long time against using the standard manufacturer's cab. Some Ford A and B type lorries and some Morris Commercials in the C series were purchased and used complete with cabs but the first serious acquisition in fleet quantities to be made was the introduction of the Dennis 30 cwt. and 2 ton models in 1935 which came complete with manufacturer's cabs. The works type cab continued to be fitted beyond this date but it had more or less died a natural death before the

Second World War completely finished it. The LMS continued to fit their own van and dray bodies as they had some very specialised requirements which were not met by the off the peg bodies. Delivery vans were provided with access from the cab to the van body so that they could be loaded from the back first-on first-off. Thus the driver could take his parcels from the front of the van all the time and never have to drop the tailgate during his delivery run - so the theory ran at any rate. It implied all sorts of working conveniences and efficiencies but is rather destroyed by my recollection that the usual riding position for the van boy was on the tailboard which was chained permanently open to the horizontal position. At any rate, the LMS were sufficiently in love with the theory that they modified manufacturer's standard cabs to give direct access to the van bodies. So far as drays were concerned the LMS considered them vulnerable to damage (which they are) and so made them quickly interchangeable. LMS drays were built as a self-supporting unit and fixed to the chassis with U bolts. If the dray was damaged then unbolt, lift off, replace and bolt up. The whole vehicle was not immobilised while repairs were carried out on the dray. This had a side benefit that the body could also easily be changed for special duties - lift off a flat and replace with a livestock body. For these reasons most of the B suffix group of vehicles carry two fleet numbers one for the chassis unit and one for the body unit.

The LMS road motor engineers were responsible as had been their pre-group forebears for developing the utility of road motor transport. The L&Y stand dray system was adopted for handling efficiency at the outset but this was obviously not the ultimate solution to the problem and further ideas were investigated. The first experiments were based on a converted horse cart as a semi-trailer and a cut down Morris car as a tractor. This as an experiment proved to be abortive but when the car tractor was replaced with a three wheeled Platform powered trolley then things began to look more hopeful. Then by coincidence Karriers in 1930 introduced a light three wheeled chassis intended for refuse vehicles operating in restricted lanes and back alleys which were too narrow for conventional vehicles. This chassis was purchased and adapted for use as a tractor and the first mechanical horse introduced in 1931. The coupling was railway designed and known as the "Wolverton" coupling. In a way it was similar to the stand-dray system in that the tractor chassis carried two channels and the turn table of the semi trailer carried two sets of rollers. Both the channels and the rollers were inclined and the front end of the semi-trailer was supported when uncoupled by a pair of fixed (i.e. non-retractable) jockey wheels. In operation, the tractor backed up to the semi trailer and the

rollers engaged in the channels, as the rollers went up the inclined channels this raised the front of the trailer until and 'Triang' type coupling locked the tractor and trailer together as one unit. To reverse the process the coupling catch was held off by a mechanical linkage and the tractor driven away thus dropping the trailer's front and back onto the jockey wheels. The trailer brakes were coupled to a spring loaded plate in the centre pivot of the turntable so that they were normally held on. When coupled to the tractor a second operated as linkage which pushed a pin up through the pivot point and forced the plate back against the spring thus releasing the trailer brakes or applying them when the second hand brake was pulled on. This coupling although crude worked well and was immediately put into service, not only by the LMS but also other railways and even purely road haulage firms. The engineering firm of Napiers saw the potential of an automatic coupling and uncoupling semi-trailer outfit and put into hand a series of refining experiments which ultimately in 1932 resulted in a rather superior coupling being produced. The patents of this coupling were sold off to Scammells and this is the coupling still in use today. Karriers as well also produced a variant of the Wolverton coupling but this was not generally adopted. The LMS used its own Wolverton coupling and the Scammell and Karrier mechanical horses. The Wolverton coupling was further refined and in its final form had retractable inside jockey wheels. Although this removed some of the worst features of the original coupling its performance was not up to that of the Scammell coupling and in the post-Second World War era the Scammell unit became the accepted standard. The standard mechanical horse unit was a tractor and three trailers (one loading, one unloading and one in transit) of three tons capacity but there were some six ton units, still with three wheel tractors but sometimes Bedford, Dennis or Karrier four wheel tractors were used. Having achieved a solution to the handling problems the engineers had thoughts about the problems of manoeuvring vehicles in the restricted areas of both the railway premises and their customers' premises. The mechanical horse was even more manoeuvrable than the horse and cart notwithstanding the fact that a horse can step sideways but there was a need for other vehicles besides mechanical horses. The railway was none too keen on the cab over engine layout which for a given dray length requires a shorter vehicle and, therefore, a shorter wheel base and tighter turning circle. The introduction by Dennis of a design where the engine was in front of the front axle was influenced by the railways' ideas. It did not materially shorten the vehicle but it did reduce the wheel base and thereby the turning arc. This in turn led to a further vehicle design which was

influenced by railway thinking. This time the problem to be solved was the work load of the vehicles crew. With a conventional cab mounted above the chassis everytime the crew mount they have to climb two or three feet up and climb down to dismount. This gets tiresome on local delivery work. To solve this problem the railway gave up its prejudices against cab-over-engine layouts and mounted the cab forward of the front wheel which enabled the cab to have a low walk-in floor. Both Karriers and Dennis produced this type of vehicle which were also used by other railways. The ultimate in LMS thinking for small local delivery vehicles was cab forward of front axle and engine mounted between the front and rear axle underneath the load space. A vehicle was produced to this specification by Scammell just before the War. Another one was supplied to the GWR and probably the other railways, for proving but the War interrupted this interesting experiment which has not been attempted since although other factors developed since have made it a much more practical proposition. Besides these quite major influences on vehicle design which affected the whole road transport industry, the LMS road motor department pioneered other minor but significant advances in vehicle design. One such instance was the provision of heavy moulded rubber wings to both front and back wheels. These wings were rigid enough to support headlights and other wing mountings but flexible enough to deflect when they fouled something and flex back into normal position when cleared. This scheme found popularity not only with the railways but also with the G.P.O. who all continued to use it - until vehicles stopped having separate wing pressings.

I have no proof but straws in the wind suggest that the Road Motor Engineers Department of the LMS was used as some sort of experimental test centre for all the railways. Many of the LMS's developments were adopted so quickly by the other railways that it seems there must have been some semi-official liaison between them. The railways all had their own Road Motor Departments with completely different policies but whereas the Karrier/Wolverton coupling mechanical horse was in use on all railways within the year of introduction as were the rubber wings, no other railway adopted the sliding cab door GWR/Thornicroft safety development which in its own right was a significant advance in vehicle design.

LMS Horse Transport

The LMS took over a well established and flourishing Horse Transport operation which gave rise to much of the ordinary freight business carried by rail.

The horse had by 1923 been an integral part of the railway scene for close on a century and in almost every railway yard, stable buildings were to be found and often these had been built at the time the line opened.

The carts and drays and omnibuses inherited by the LMS were well-ried, and horse transport had already seen full development.

However, the LMS was the largest railway operator of horse transport in the country:-

	1923
<u>LMS Road Horses</u>	9,370
<u>Total of Big Four Railway Coys.</u>	<u>18,083</u>
<u>LMS Horse Wagons and Carts</u>	19,432
<u>Total of Big Four Railway Coys.</u>	<u>32,327</u>
<u>LMS Horse Omnibuses</u>	22
<u>Total of Big Four Railway Coys.</u>	<u>57</u>

The total tonnage carried in 1923 by LMS Road Horses was 9,012,673 tons, for a mean average close to 1,000 tons per horse. However, in addition to 9m tons of ordinary freight, vast quantities of parcels were handled, no less in fact than 32,061,328 in 1925. Therefore, in addition to the annual average 1,000 freight tons, each horse also had an average of 3,421 parcel items to carry per annum.

Horse transport was spread throughout the system with the majority centred on the cities and large towns. The LMS used horses through to nationalisation and although there was a gradual reduction in numbers from 1925 onwards (In 1924 Horse stock increased to 9,870) the LMS still had greater reliance on them than any other Company:-

	<u>1946</u>	<u>1947</u>
<u>LMS Road Horses</u>	6,168	
<u>Total of Big Four Railway Coys.</u>	<u>9,077</u>	<u>8,793</u>

By 1946 the LMS had more carts per horse than in 1923, and they had continued to replace old vehicles with new ones up to the war:-

	<u>1946</u>	<u>1947</u>
<u>LMS Horse Wagons and Carts</u>	18,300	
<u>Total of Big Four Railway Coys.</u>	<u>24,935</u>	<u>24,095</u>

The railway horse was generally purchased as a five-year old after early years on the farm, for a working horse takes around this time to fully develop. Many breeds figured in railway service but the heavy Clydesdales, Shires and Suffolk punch were common. Irish and Continental breeds were imported in substantial numbers for use in the goods shafts.

The slighter built Bays were often used for the horse drawn omnibuses, but by 1927 all 22 LMS omnibuses had been withdrawn.

The working life of the railway horse depended largely on the type of work they did, with the heavy London dray horse being sold off after a short life of 5 years. A 70 hour week with a daily maximum of 14 hours was routine and a coal horse would be expected to deliver an average 30 tons per week.

Rather fewer horses were employed on shunting work in goods yards:-

	<u>1923</u>	<u>1930</u>	<u>1946</u>
<u>LMS Shunting Horses</u>	391	229	75
<u>Total of Big Four Railway Coys.</u>	1,130	671	238

Chains attached to the usual harness had to be attached to the side loops of the wagons and not to the draw bar hooks or couplings.

The 19432 wagons and carts taken over by the LMS were of many different sizes and designs, and generally they lasted for a long time - many pre-group items lasting through to nationalisation.

The well-known flat drays or trolleys were not all alike, as may have at first seemed the case. Different sizes were produced to suit the various types of traffic emanating in particular localities. For example three 65 cwt trolleys were designated, but each a different size - one for use in Birmingham, another slightly smaller for the Leicester locality and then a smaller one for general use.

Specialised trolleys for heavy duty work were produced in small numbers, notably for stone carrying at the Company's Derbyshire Quarries,

for timber traffic and also for carrying boilers.

Two and four wheel covered vans for parcels and other general work, including some fitted for cycle carrying one assumes in Nottingham and Birmingham, were provided and finished in passenger livery and these were frequently to be seen at passenger stations.

Single Horse Vans could carry up to 2½ tons and the larger 5 ton vans for city work were pulled by horse pairs.

Some large low bodied vehicles were known as Floats, and these were mostly 4 wheeled. A cranked rear axle - the body floated between the wheels - allowed a much lower floor and sturdy outside framed sides and ends made these suitable for carrying small livestock. However, some were fitted with securing bars and screw clamps for anchoring tall slim crates etc.

A smaller 2 wheel Float, again low bodied on a cranked axle, was provided for a load of one horse and used in London to ferry sick and lame horses to the Kings Road Sick Bay.

Anything over ½ tons weight demanded the use of a horse team, two, three or four 'matched' for performance and maintained together, and used either side by side or in a tandem pull.

'Dickey' seats were fitted to some of the vans and drays to give the drayman a better high level view in traffic.

Horse omnibuses, withdrawn soon after coming into LMS ownership, were built to five coach built standards and finished in full lined passenger livery. They were maintained in first class condition to comply with the annual statutory inspection standards.

The LMS constituent Companies had prolonged the use of railway owned omnibuses by refusing access to station waiting ranks, but with the popularity of the motor bus they quickly disappeared.

With so many horses the railways had a perpetual problem feeding them. Provender Departments were set up to prepare feed in required quantities, and balanced to suit the different requirements of the horse and the type of work they handled.

Mixtures of hay, straw, sanfoin, clover, oats, beans and maize were despatched for use throughout the system.

Quite apart from the usual stable buildings

so often seen in the Goods Yards, larger buildings with stalls for 3/400 horses were provided at St. Pancras and Broad Street in London, and a large Horse Hospital was located in the Kings Road area. Any casualties were despatched for treatment and replaced by a sound animal.

The LMS authorities were very mindful of the importance of the horse and a driver or carter would be punished for any cruelty, violence, negligence or improper driving and he was ordered to treat the horse well to get the best out of him. Each horse was provided with three meals a day on working days with two on rest days. A nosebag was provided so that the horse would have a meal whilst at work and the carter had to ensure the horse was watered at least three times daily whilst at work. Stables were strictly controlled and every effort was made to ensure the horses were maintained in sound condition.

A whole range of operations were covered in the Carters and Stable Staff Instructions and at all times these had to be adhered to. Carters and Cart-boys were not allowed to ride on the shafts or footboards, nor mount and dismount whilst the cart was in motion. Small items had to be sheeted over when working in towns; brakes, wheelskids or chains had to be applied when descending gradients, or during loading or unloading of heavy articles, and also whenever a cart was left unattended.

Liveries of the pre-group companies were well in evidence during early LMS years, but repainting took place as follows:-

Trolleys etc. Black with white lettering.

Sides LONDON MIDLAND AND SCOTTISH RAILWAY COMPANY with the vehicle number at the front end.

Front LMS on offside, number on nearside.

Rear LMS.

Later lettering reduced to L.M.S. RAILWAY CO. and the numbers

Parcels Vans Lined passenger livery to waist panel, black canvas top.

Lettering Gold shaded later straw shaded.

Unfortunately the railway photographer has always tended to concentrate on engines and trains, but as many now realise other things formed part of a very complex railway scene, not least the horse and it is a pity that

relatively little has been recorded by the camera. Those that have, however, serve to illustrate that basic designs of cart changed little from the early railway days through to their eventual withdrawal in the late 50's.

LMS Tramways

The LMS took over two tramway systems with a total of 25 tramcars, to become the only railway operators of tramways of the big four companies.

The Wolverton to Stony Stratford Tramway with 5 cars ceased operations in 1926, whilst the other and larger company, The Burton and Ashby Light Railway Company had a fleet of 20 tramcars and these operated until early in 1927.

The Wolverton system was steam-operated, whereas the Burton-Ashby line was electric traction, with power from the Company's own generators.

The Wolverton line finally closed in May 1926 as a result of industrial action. The railway men supported the striking miners and with a shortage of coal and no operators, the end of the strike came on 14th May, but there was no immediate reinstatement of staff or return to full operations. The steam tramway was a casualty and it never again commenced operations.

However, the Burton and Ashby Light Railway was fortunately electrically powered by diesel generators and so was not affected by the shortage of coal in 1926. With the increasing use of the motor bus, competition for passengers was intense and the tramway services were reduced to rush hours only. With costly maintenance required on the now 20 year-old trackwork, the tramways were beset with problems and finally the doors were closed on 19th February, 1927.

Burton and Ashby Light Railway

The Tramway resulted from a series of Parliamentary Orders around the turn of the century and the Midland Railway lent its forces to try to have the line authorised by Parliament.

The desirability of running into Burton Station was obvious and the Burton Corporation Tramways were already operating in the town, but on an unusual track gauge of 3'6", and so this was the determining factor for the gauge of the new line to Ashby.

Work commenced in early 1905 and Burton

Corporation extended their track almost a mile through Winshill to the Boundary at Moatbank close to Bretby, and it was from this point the Ashby line commenced. Running powers over the Corporation line were granted. From the Boundary point the new track served the villages at Stanhope Bretby, crossed on reserved track over several fields to reach Sunnyside Newhall, a further short stretch of reserved trackwork to rejoin the roadway still in Newhall and thence onto Swadlincote, past the depot built on made-up land adjacent to the Goods Yard and Passenger Station.

The original authorisation was for a line to Ashby Station and from Swadlincote. Just out of the town centre here the line ascended a steep climb, known locally as 'Big 'ill' and on through Woodhouse, Woodville, Boundary, Answell and into Ashby to reach the station, a fine stone building just by a very imposing 'Royal Hotel'.

Further stretches of line were built between Swadlincote and Castle Gresley Station and a short link from Woodhouse to Church Gresley, thus joining the Ashby line to Castle Gresley. The Woodhouse connection became known as Woodhouse Junction and this name lives on to this day.

Although coal was the major local industry diesel generators were installed and there were several determining factors, not least the ease of starting a diesel engine and the continuous running capability without close supervision.

The Generating Station was at Swadlincote adjacent to the depot, with two 3 cyl. engines from the Diesel Engine Co. One engine was sufficient for normal tramway requirements with the other on standby. In 1923 the Swadlincote Power Station generated 457,767 units of electricity for the tramway and in 1925 this rose to 521,818 units.

The track was single with passing loops. The line therefore complemented the passenger train services and linked several of the South Derbyshire villages with the railway. In addition to the principal station termini at Ashby and Castle Gresley (on the Burton-Leicester line) and the important one at Burton, the tramway also passed by the Swadlincote and Woodville Stations on the loop line from the Burton-Leicester line. At Swadlincote a large bridge in engineers blue bricks was constructed to take the trams over the railway line, and the tram depot had direct access onto this bridge.

There were several steep climbs for the trams to negotiate in addition to 'Big 'ill'.

Bearwood Hill on the Burton system, Moat-bank, Ingles Hill near Ashby, Burton Road, Ashby, Alexandra Road, Swadlincote and Cappy Hill, Gresley, were formidable climbs and the safety record was marred by only one serious accident. No. 19 ran away and overturned at the foot of Bearwood Hill in 1915 but there were few injuries.

By LMS days it was much as before. After a series of losses in the last years of the war economies were made and profitability was restored. However, the development of motor buses was forging ahead and the railway companies were investing large sums in this form of transport, to safeguard their interest. The last services ran on 19th February, 1927.

The Depot at Swadlincote had been built with accommodation for 24 trams, 8 tracks x 3 deep but only 20 trams were owned.

The tramcars were built by Brush Electric Co. Ltd. of Loughborough, open topped, open driving ends on a four wheel truck. Westinghouse equipment with two 25 h.p. Westinghouse No. 80 motors were standard, and four braking systems on each car. BTH Controllers with magnetic track brakes and run back brakes, plus hand wheel and hand track brakes.

The cars had a capacity for 51 passengers, 31 on the all-weather toast rack/freezer, and apart from a livery change no other modifications were carried out.

The cars were in Crimson Lake and a white livery with ornate gold panelled lining and Midland crest. It was in this condition that the cars came into LMS ownership but all the cars were repainted in a simpler livery at Derby Works. The original white had weathered to a light cream and the later cream mellowed in a short life to a yellow. Although the method of transport to Derby Works is not certain the LMS owned bogie tramcar wagons and with an open top tramcar the bodies would almost certainly come within the loading gauge. The trolley pole, seats and wire screens were easily removed and so it is more than likely visits to works were by rail journey.

After the closure, 10 bodies were sold to the Tynemouth and District Electric Traction Co. and the remaining 10 sold locally for further service to chickens and the like.

It is worth recording here that a Gresley businessman, Simon Whittaker, purchased several bodies and it was from this land that No. 14 and various parts of others, were rescued in 1970 by the Gresley Model Railway Society. Restoration is now well under way under the guidance and often singular efforts of Peter

White a local historian. One Rawlinson tower maintenance wagon was also owned, believed pulled by a horse.

Services were half-hourly with a 10 minute interval at peak periods, and this called for 17 trams in operation at these times. Gresley trams made a connection at Swadlincote with the Burton and Ashby service.

Special services were often run, Sunday School Outings and other Club Outings, and even a Railway Club on 8th July, 1909 hired three trams for a return trip from Burton to Ashby. Special services to feed passengers to excursions from Burton Station before normal services, and upon their return after the last train, were another feature.

Three Aspect Colour light signalling was installed on the reserved country stretch between Stanhope Bretby and Sunnyside, Newhall where the line traversed the brow of a hill and the west passing loop was out-of-sight from both sides. The lights were operated by a trolley wheel contact on a solenoid, a system devised and installed by a firm, Bracknell, Munro and Rogers.

With the closure of services on 19th February, 1927 the last railway owned and operated tramway in Great Britain passed into history.

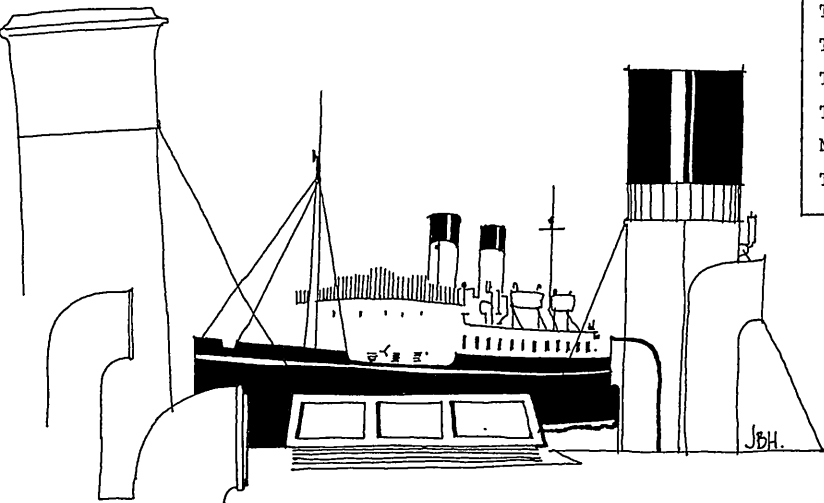
Rail passenger services were still running through Castle Gresley, Swadlincote, Woodville and Ashby and motor buses took over the tram services.

The major undertaking 'Midland Red' or the Birmingham and Midland Motor Omnibus Co. Ltd., to quote its full title, in which the LMS had a controlling interest, took over the main services. Other local operators, Victoria Motorways, Regent buses, Brooks Blue buses ran alongside the trams for a period.

The writer considers himself fortunate in having lived his first 30 years in Swadlincote - after the demise of the tramway - and knowing the route well, but also in having a father who worked on the trams for the LMS.

7

NAME	TONNAGE	LENGTH	BREADTH	BUILDER & DATES
TSS Rosstrevor	1094	272'1"	35'1"	Denny 1895/1926
TSS Cambria III/ Arvonía (1920)	1842	329'	39'1"	Denny 1889/1925
TSS Galtee More	1112	276'1"	35'1"	Denny 1898/1925
TSS South Stack	1066	299'5"	36'0"	Laird Bros. 1909/1931
TSS Scotia II/Menevia (1920)	1872	330'2"	39'1"	Denny 1902/1926
TSS Snowdon	1110	299'9"	36'6"	Laird Bros. 1902/1935
TSS Slievemore	1138	299'8"	37'0"	Harland Wolff 1904/1932
TSS Slieve Bawn	1148	300'2"	39'3"	Harland Wolff 1905/1935
TSS Slieve Gallion	1166	299'5"	37'2"	Vickers & Maxim 1908/1937
TSS Rathmore	1569	299'5"	40'2"	Vickers & Maxim 1908/1927
TSS Greenore (II)	1488	306'	40'7"	Cammell Laird 1912/1926
TSS Curraghmore/ Duke of Abercorn (1930)	2217	307'1"	40'1"	Denny 1919/1935
TSS Anglia (III)	3460	380'5"	45'2"	Denny 1919/1935
TSS Hibernia (III) II (1948)	3467	380'6"	45'2"	Denny 1920/1949
TSS Cambria (IV) II (1948)	3445	380'6"	45'2"	Denny 1920/1949
TSS Scotia (III)	3441	380'5"	45'2"	Denny 1921/1.6.1940
TSS Slieve Donard (I)	1116	299'9"	39'1"	Vickers 1921/1954
TSS Slieve More (II)	1366	299'7"	44'7"	Denny 1932/1964
TSS Slieve Bloom	1279	300'2"	44'7"	Denny 1930/1964
TSS Slieve League	1343	299'7"	44'7"	Denny 1934/1966
TSS Slieve Bawn (II)	1447	299'7"	45'1"	Denny 1936
MV Charon	--	26'0"		LMSR 1938
TSS Anglia (III)	3460	380'5"	45'2"	Denny 1920/1935



SHIPPING

Such an innocuous title as this covers a bewildering array of sleek cross channel ships, more humble coasters and short sea traders, and a host of minor craft, tugs, hoppers, dredgers, barges etc.

This paper, while dealing with what might be called ships proper, also attempts to chronicle the host of minor craft, so necessary in their supporting roles.

It must be admitted that the Irish Sea can produce all the elements that one could wish, or fear and it is proper to start this account with the 'Premier Lines' shipping route to Ireland from Holyhead.

Direct rail communication between Euston and Holyhead was completed in 1850, and at the time Parliament decided that the Royal Mail route could be more conveniently operated by inviting tenders for carrying the mail across the sea portion. The contract was awarded to the City of Dublin Steam Packet Company to operate from 1st May, 1850, and so well did this Company perform that seventy years passed by before the LNWR managed to gain the contract.

The seventy years in the minor role had not been wasted and the railway company had wisely concentrated on passenger comfort, gaining a justifiable reputation in this context.

Before the first World War the LNWR had planned to build four new ships in another attempt to wrest the mail contract from the Dublin Company, and when peace came, orders were placed with Messrs. Denny of Dumbarton for the four vessels. On 11th November, 1919 the 'Anglia' was launched followed by the 'Hibernia' in March 1920, the 'Cambria' on 31st August and the 'Scotia' in November.

The Railway Company was successful with their tender for the mail contract which was awarded for twenty years to commence on 16th November, 1920.

The four new ships were notable for being the fastest and largest trading in British waters. They were typical Denny products, fine looking two funnelled vessels of around 3,500 tons and capable of 25 knots, with a length of 380'6", and incorporated all the best practice of both the City of Dublin and the Railway Company's previous packets. The heyday of Irish Sea traffic was, however, past and passenger receipts were but a fraction of those of pre-War.

In 1925 the 'Anglia' was withdrawn after very little service as redundant, and the other three were reconditioned by Denny's in 1930

when the observation lounges were formed at the forward end of the boat deck, this addition enhancing the appearance of the ships, and bringing them right up to date.

The 'Anglia' was sent for scrap to Troon in 1934 and when a fourth ship was needed to augment summer sailings, one of the Heysham 'Dukes' would be pressed into service.

In 1939 a contract was placed with the Fairfield Shipbuilding and Engineering Company for the construction of two 6,000 ton oil burners.

The 'Scotia' was lost at Dunkirk and the aging 'Hibernia' and 'Cambria' ran the Holyhead route, but when the Heysham fleet was requisitioned, the 'Cambria' transferred to the Heysham station and worked with the 'Louth' (later the 'Ulster Duke') of the British and Irish Steam Packet Company throughout the War and for some time after. The last major act of the LMSR was to order new tonnage in the summer of 1946, and the elderly 'Hibernia' was supported by the 'Princess Maud' from the Stranraer-Larne route, and during the coal crisis of 1947 this ship alone maintained the service having been converted to oil burning.

The new ships entered service in 1949 and although the LMS had now disappeared the vessels maintained many features which could be called LMS marine practice. Among the older LNWR ships the following are worthy of note having passed into LMS ownership.

TSS 'Scotia'(II) 'Menevia' was commissioned in 1902. With a speed of 21 knots she became an armed merchant cruiser during the 1914-18 war coming into LMS ownership with the latter name. She was employed on various routes before being sold to the Isle of Man Steam Packet Company in 1928, being scrapped the same year.

TSS 'Slievemore' and 'Slieve Bawn', built in 1904 and 1905 respectively, by Harland & Wolff. They maintained the passenger service between Holyhead and North Wall during the first war although nominally cargo ships. They were withdrawn in 1932 and 1935.

Another similar pair, TSS 'Slieve Bloom' and 'Slieve Gallion' appeared in 1908, 'Slieve Gallion' surviving until 1937.

Vickers built the 'Rathmore' in 1908. Of 1,500 tons with twin funnels and masts and considerable passenger accommodation, she was capable of 20 knots with reciprocating machinery. Although sunk by collision in

March 1918, she was successfully salvaged and was transferred to the ALA service (see Fleetwood notes) in 1927, being renamed 'Lorraine'.

TSS 'Greenore' was the first turbine steamer built by the LNWR in 1912 having three screws with a speed of 21½ knots. Built by Cammell Laird she lasted until November 1926 when she went for scrap.

TSS 'Curraghmore'/'Duke of Abercorn' was laid down in 1914 at Denny's yard but not completed until 1919. She was also about 1,500 tons with a cruiser stern and although intended for the Greenore service she spent her first years on the Dublin run until the new mail ships appeared in 1921, when she went to the Greenore station. The LMSR used her as a spare steamer and she changed her name to 'Duke of Abercorn' to supplement the Heysham Belfast service in 1930 where she stayed until going for scrap in 1935.

Fleetwood-Barrow-Heysham.

As early as 1843 a service to Northern Ireland via Fleetwood was established and by 1870 the L&Y and LNWR had obtained powers to run steamers to Belfast and Londonderry from Fleetwood, ships being added from time to time.

The first vessel to enter LMS ownership was TSS 'Duke of Clarence'. Built by Lairds at Birkenhead, she was the prototype for seven further 'Dukes' which came from Denny, Vickers and Clydebank.

The 'Duke of Clarence' had a gross tonnage of 1,458 tons, two sets of triple expansion engines giving a speed of 19 knots.

In 1906 she was acquired outright by the L&Y, and transferred to the Goole section in June of that year, to operate principally on the summer passenger and cargo service between Hull and Zeebrugge jointly with the NER. Between times she sailed on the Liverpool-Dogheda service and ended her revenue earning with cruises from Hull around the British coast. Having been reboilered in 1907 she was finally sold for scrap in 1930 after nearly forty years of useful service.

The next vessel to be built was the Denny 'Duke of York'. She was similar to her predecessor with two masts and single funnel. She was acquired by the Isle of Man Steam Packet Company in 1912 and as the 'Peel Castle' ran until 1939.

Clydebank's first 'Duke' was 'Duke of Connaught'. She was some 200 tons larger than her immediate predecessors and was capable of 20 knots. The LMSR employed her principally on the Heysham-Isle of Man service, until transferred to the East Coast to replace the 'Duke of Clarence'. She was sold to Dutch shipbreakers in 1934.

The last pair of vessels for the Fleetwood service were a pair of identical twins from Denny's Dumbarton Yard in 1909. The 'Duke of Cumberland' and 'Duke of Argyll' were turbine steamers with two funnels. With a tonnage just over 2,000 they were capable of 21 knots. These steamers constituted a fine pair and when the LMSR closed down the Fleetwood service in favour of Heysham they were transferred to the new Tilbury-Dunkirk service of Angleterre-Lorraine-Alsace Societe Anonyme de Navigation and were renamed 'Picard' and 'Alsacien' respectively.

Barrow.

In 1907, the Midland Railway Company became sole owners of the remaining steamers of the Barrow Steam Navigation Company which had been established in 1867 when the Furness Railway and James Little and Company had been partners. The Midland Railway's association with the area dates back to 1859 when they leased the 'little' North Western Railway which ran from Skipton to Poulton (later to be called Morcambe) and became a partner with the Furness Railway to build a line between Wennington on the Furness route and Carnforth on the Midland, thus giving access to Piel Pier. The Barrow S.N.Co. was formed to allow the Railway Companies to operate services beyond Morcambe Bay and in 1867 services were inaugurated between Morcambe and Belfast and Piel Pier to Douglas, the 'Barrow Route'.

The progressive Midland Company, however, decided to build their own dock at Heysham and in 1904 opened the Heysham-Belfast nightly service.

It was a bold venture with the L&Y firmly established at Fleetwood, but was successful.

In 1907 the three remaining steamers of the Barrow fleet, seriously affected by the opening of Heysham, joined the Midland ships on that station.

The three vessels were the TSS 'City of Belfast', TSS 'Duchess of Devonshire' and 'Duchess of Buccleuch' which was disposed of in 1910.

The 'City of Belfast', first screw vessel of the Barrow fleet was a 1,000 ton ship built at Birkenhead. She survived to enter the LMSR list but was sold in 1925 to Constantine Toggias, Piraeus and sailed for some time as the 'Nicolas Toggias'.

The 'Duchess of Devonshire' a similar but larger ship had been built at the Vickers Yard in 1897. She was a handsome craft, again with twin sets of triple expansion machinery giving a speed of 18 knots. She was used on a number of routes by the LMS, principally on the Heysham-Douglas service, and was sold to Messrs. Bland & Co. Gibraltar and renamed 'Gibel Dersa' in 1928 when the new 'Dukes' were commissioned.

The LMSR went to Denny's for the three magnificent ships delivered in 1928. TSS 'Duke of Lancaster', 'Duke of Argyll' and 'Duke of Rothesay' were their names thereby continuing the nomenclature of the Fleetwood vessels.

Of over 3,500 tons they were typical Denny cross channel design, propelled by turbines driving two screws, at over 21 knots originally built with cowl tops to their two funnels, this feature was removed from 'Duke of Lancaster' in 1937, the other two being so altered in 1935.

As on modern liners their decks were lettered A, B, C and D and had a large number of cabins for sleeping accommodation. Cargo and cattle were also carried. The 'Duke of Lancaster' was the black sheep of the trio and survived three strandings one collision, catching fire and sinking in Heysham Harbour, and in 1940 colliding and sinking Messrs. Gilcrists' coaster, 'Fire King'. She had earlier had an argument with a trawler in Morecambe Bay.

With the arrival of the new 'Dukes' in 1928 the LMS rationalised their Irish sea services, withdrawing from the Isle of Man-Heysham and Fleetwood in favour of the I.O.M.S.P. Co. Ltd. and Liverpool-Drogheda, continued by the British and Irish S.P. Co. Ltd. The I.O.M.S.P. Company took over the 'Duke of Cornwall' and 'Antrim', naming them respectively 'Rushen Castle' and 'Ramsey' (later 'Ramsey Town'). The 'Colleen Bawn' and 'Mellifont' were transferred from Liverpool to the Holyhead-Greenore service.

The three 'Dukes' proved so popular that further accommodation was soon required and the old LNWR steamer 'Curraghmore' was transferred to the Heysham station being renamed 'Duke of Abercorn'. She stayed on this route for five years until 1935 when she went for scrap upon the arrival of the TSS 'Duke of York'. This second 'Duke of York', built by Harland & Wolff at Belfast introduced real LMS passenger policy to sea, where the 'tourist' class was scarcely inferior to first class.

Although smaller than the earlier trio the 'Duke of York' had a greater tonnage and

appeared more massive. She was a most advanced ship, being fitted with automatic fire extinguishers, roller hatch covers and four electric cranes. She served as HMS 'Duke of Wellington' and upon demobilisation went to the Eastern region in 1949, though temporarily back on the Holyhead-Dun Laoghaire route in 1951.

The three 1928 'Dukes' had all taken part in 'D' Day landings and after most successful careers were broken up in 1956.

TSS 'Slieve Bearnagh' a ship similar to 'Slieve League' but about nine feet longer was launched in 1936 to supplement the Heysham-Belfast sailings, relieving the passenger steamers of some cargo and cattle traffic.

The Heysham 'Dukes' were built with one peculiarity which inhibited their use elsewhere, namely the requirement that they berthed port side to the quay and their hatches and derricks were offset to accommodate this arrangement. When the Midland Railway built Heysham it was intended that the quay where the ships berthed should be a central one with ships along both sides. Although the excavation was carried out the intention to double the water area was never fulfilled, but one is led to think that had the 'Dukes' had a choice of sides at which to berth, they would have had conventional cargo handling facilities.

At Morecambe the outer wall of the swimming pool is all that remains of the commercial shipping history of the town.

Lake District.

Although it has been stated that only LMS sea-going vessels are dealt with, the Lake District vessels are of more than passing interest.

An incredible iron steamer, the 'Gondola' plied on Lake Coniston under the ownership of the Furness Railway. She was launched in 1859 and survived to be sold off in 1944. Amongst the many descriptions of her hull shape, the one of a cross between a cucumber and an early submarine seems most appropriate.

On Lake Windermere TSS 'Swan (1)' was provided by Seath of Rutherglen in 1869. An iron steamer over 140'0" long she could accommodate 442 passengers. She was spared the indignity of being converted to diesel and was retired in 1937, a graceful vessel to the end.

TSS/TSMW 'Cygnet' and TSS 'Teal (1)' were built at Barrow in 1879 for the Furness Railway Company. They were slightly smaller than the 'Swan' and could carry 336 passengers.

FLEETWOOD & HEYSHAM SECTION

NAME	TONNAGE	LENGTH	BREADTH	BUILDER & DATES
<u>FLEETWOOD</u>				
TSS Duke of Cornwall	1540	315'	37'1"	Vickers 1898/1928
TSS Duke of Connaught	1680	315'	38'2"	John Brown 1902/1934
Tr.SS Duke of Cumberland	2255	330'4"	40'9"	Denny 1909/1928
Tr.SS Duke of Argyll (I)	2052	330'9"	41'1"	Denny 1909/1928
<u>HEYSHAM</u>				
TSS Antrim (II)	2100	330'9"	42'2"	John Brown 1904/1928
TSS Donegal (II)	1997	331'	42'1"	Laird 1904/1917
Tr.SS Londonderry (II)	2086	330'6"	42'1"	Denny 1904/1927
Tr.SS Manxman From Barrow Steam Navigation Co. Acquired by M.R. 1907	2174	334'	43'1"	Vickers & Maxim 1904/1920
TSS City of Belfast	1055	280'6"	32'1"	Laird 1893/1925
TSS Duchess of Devonshire	1265'	300'	35'1"	Vickers & Maxim 1897/1928
<u>LMS HEYSHAM</u>				
TSS Duke of Lancaster	3608	349'1"	53'1"	Denny 1928/1956
TSS Duke of Argyll	3604	349'1"	53'1"	Denny 1928/1956
TSS Duke of Rothesay	3606	349'	53'1"	Denny 1928/1956
TSS Duke of York	3743	339'2"	52'2"	Harland Wolff 1935/1949
TSS Silvee Bearnagh	1400	309'4"	45'1"	Denny 1936

Both vessels worked together for many years but 'Cygnet', after a period laid up after the 1st World War, was converted by the LMSR to a motor vessel. This was considered to be an unmitigated disaster by many who could not endure the appalling noise and stench of fuel oil.

Teal survived as a steamer until 1927 when scrapped but 'Cygnet' soldiered on until 1955.

TSMV 'Teal (II)' and 'Swan (II)' were built in 1936 and 1938 respectively and are to all intents sister ships. They were built by Vickers Armstrongs at Barrow, being erected on the Company's slipway at Lakeside, Windermere. These vessels presented a new departure having an additional deck with extensive covered accommodation. They are nearly 136 ft. long and have a speed of 11 knots.

The Loch Awe vessel 'Countess of Breadalbane' is a smaller edition of these two Windermere ships.

LAKE DISTRICT

SS Gondóla	42	84'0"	14'2"	Jones Quiggin 1859/1944
TSS Swan	71	141'7"	17'0"	Seath 1869/1938
TSS/TSMV Cygnet	52	100'2"	14'0"	Barrow 1879/1955
TSS Teal (I)	53	100'1"	14'1"	Barrow 1879/1927
TSMV Teal (II)	251	135'7"	25'0"	V.A.* 1936
TSMV Swan (II)	251	135'7"	25'0"	V.A. 1938

MV 'Tern' was built by Forrest of Wyvenhoe (or Wivenhoe) Essex in 1891 as a twin screw steamer. She was converted to diesel in 1958 and given a shorter broader funnel. Present passenger capacity is 608 and gross tonnage 120. MV Swift was built by T & B Seath and Co. of Rutherglen in 1900 as a twin screw steamer being converted to diesel in 1957. Passenger capacity is 724, the largest of the four Windermere vessels, and gross tonnage is 203.

In 1908 the Furness Railway acquired the TSS 'Lady of the Lake' (II) to supplement the

sailings of the 'Gondola' on Lake Coniston. She was a more conventional vessel, resembling her Windermere contemporaries and was scrapped in 1950.

Stranraer - Larne 'The Short Sea Route'

As early as 1662 a cross channel service has operated out of the shallow waters of Loch Ryan.

In 1871 the Larne and Stranraer Steamboat Company was formed and obtained the mail contract in 1874. In 1890 the Company was taken over by the Portpatrick and Wigtownshire Railways Joint Committee owning 4/5ths, and the Belfast and Northern Counties Railway 1/5th, the whole service being vested in the LMSR in January 1923.

At this date ships of a type previously described as 'typical Denny' were on the route, the oldest vessel, Denny built was the 'Princess Maud' (I) which entered service in 1904. Early in June 1931 she ran aground at Barrs Point just outside Larne and although refloated was found to be damaged beyond economical repair. She was sold for scrap in 1932.

The 'Princess Victoria' (II), six years younger than 'Maud' was sold to Norwegian shipbreakers in 1934.

In 1931 Denny's produced a fine geared turbine steamer, over 2,500 tons, the TSS 'Princess Margaret'. She was considerably larger than her predecessors and was luxuriously appointed and generally well in advance of previous practice.

In 1939 'Princess Margaret' sailed on the Heysham-Belfast service, returning to Stranraer at the outbreak of the second war. In the spring of 1934 Denny's produced an even finer vessel, in many ways superior to 'Princess Margaret'. This ship was TSS 'Princess Maud' (II), much space being devoted to cabin accommodation for both classes. Both ships had a speed of 21 knots and had observation lounges constructed beneath the bridge. This feature was copied on other members of the fleet including the Holyhead mail steamers and the later 'Dukes' on the Heysham service.

'Princess Maud' was the last vessel to leave the Dunkirk evacuation. She resumed her sailings in August 1946 having been converted to oil-firing, but in 1947 as previously stated helped out on the Holyhead-Dun Laoghaire service and after a spell on the Southampton-St. Malo service in 1951, returned to the Holyhead station until the arrival of the utility named 'Holyhead Ferry 1' when she was sold to a Panamanian Company and renamed 'Venus'.

TMSV 'Princess Victoria' (III) was launched by Denny's in April 1939, the first motor ship built for a British Railway. She was built to provide means of transporting cars and was known as the 'floating garage'. She was a good looking ship, however, and showed nothing in her lines of her cargo capacity. Her life was very short as she struck a mine off the Humber estuary in May 1940 and was sunk.

In 1947 a near replica of 'Princess Victoria' (III) was launched. This was TSMV 'Princess Victoria' (IV), built by Denny and is remembered as a victim of an unprecedented storm when she foundered off the County Down coast with heavy casualties, one of the worst disasters in the history of coastal shipping, 31st January, 1953.

Kyle of Lochalsh Kyle-Kyleakin Ferry.

The Highland Railway took over the ferry service in 1897 from the County Councils of Inverness and Ross, leasing the boats to private individuals, an arrangement in force for 47 years. David MacBrayne appears to have been the lessee from 1st January, 1935 to 31st December, 1944 when the LMSR became owners until 1st January, 1948. The ML 'Skye' entered service in 1922 followed by M.V.s 'Kyleakin' in 1930, M.V. 'Moil' in 1936 and M.V. 'Cuillin' in 1942. These last three incorporated an ingenious turntable arrangement which helped greatly in the unloading and loading at the slipways no matter the state of the tide.

KYLE OF LOCHALSH SECTION KYLE-KYLEAKIN FERRY VESSELS - TO LMSR 1945

MV Skye	8	33'0"	10'3"	Miller 1922/1949
MV Kyleakin	7	--	--	Goole 1930/1951
MV Moil	15	41'0"	17'7"	McLean 1936/1951
MV Cuillin		44'0"	17'5"	Denny 1942/1954

STRANRAER SECTION

NAME	TONNAGE	LENGTH	BREADTH	BUILDER & DATES
Tr.SS Princess Maud (I)	1655	300'6"	40'1"	Denny 1904/1932
Tr.SS Princess Victoria(II)	1687	300'6"	40'2"	Denny 1912/1934
TSS Princess Margaret	2523	314'2"	47'1"	Denny 1931/1962
TSS Princess Maud (II)	2886	319'2"	49'1"	Denny 1933/1965
TSMV Princess Victoria(III)	2197	309'8"	48'1"	Denny 1939/1940
TSMV Princess Victoria (IV)	2694	309'8"	48'1"	Denny 1946/1953

Goole Section LYR.

The port of Goole, some 40 miles from the open sea is situated on the Yorkshire Ouse where the River Don joins the main stream. Although far from the sea a tidal range of 26' is experienced.

Having started steamship operation in a big way the LYR set about obtaining powers to run steamships from Goole culminating in the acquisition of the Goole Steam Shipping Company Limited with its comprehensive services to Denmark, Holland, Belgium and France. The Company had a distinctive funnel livery of dark buff, black top and red band intervening which was adopted by the LYR. It was also adapted by the LMSR in 1923 as the standard funnel colours, but such an outcry resulted mainly from Scottish quarters that the red band was removed except on the Goole ships and to this day, the old Goole Company's colours are seen.

From May 1935 the Goole ships of the LMSR have operated under the name 'Associated Humber Lines' managed by Associated Humber Lines Control Committee, the initials A.H.L. in raised black letters being carried on the red band of the funnel.

All the vessels in this section are typical short sea traders of their time varying in length from 210 ft. to 250 ft. as a rough guide. They are no nonsense vessels as one would expect with the LYR, and passengers were tolerated up to 12 in number, this being the maximum any foreign going ship can carry without a doctor on board.

The vessels which came into LMSR ownership include some quite venerable ships and the oldest was the 'River' SS 'Aire' (I), built by Dobson & Co. She was 212' long with a tonnage of 696, and went to the breakers yard in 1930.

SS 'Calder' continued the line of vessels built by the Newcastle Yard and was similar to the 'Aire' being broken up in 1926. The 'Derwent' and 'Wharfe', survivors of the next quartette to have been built by Dobson were disposed of in 1931 and 1933 respectively. Of the ships acquired by the LYR in the nineties from the Yorkshire Coal and Steamship Company Limited, three became the property of the LMSR, the 'River Crake' going to the breakers in 1927, followed by the 'Wenning' in 1932, and the 'River Ribble' in 1933.

Of the next trio only the SS 'Nidd', built by Dobson lasted until 1933.

In 1906 Swan Hunter and Wigham Richardson built the 'Mersey' and the 'Irwell'. The 'Mersey' was the first ship ordered by the Railway Company and was built for the Rotterdam trade. Both vessels were 255' long with tonnage around 1040. The 'Mersey' was sunk by a magnetic mine in the Downs on 23rd April, 1940, but her sister survived until sold for breaking in March 1954.

The steamships 'Equity', 'Liberty' and 'Unity' were obviously imports and were in fact bought from the Co-operative Wholesale Society in 1906. The 'Unity' became a war loss in 1918, but the other two lasted until sold to Italian owners in 1932. The TSS 'Duke of Clarence', although listed in the Goole section is most unlikely to have visited the port and was in fact stationed at Hull, running a joint service with the N.E.R. to Zeebrugge.

The I&Y added new tonnage with the completion in 1907-8 of three new vessels SS 'Douglas', 'Saltmarsh' and 'Spenn', the 'Douglas' being slightly larger at 950 tons with a hull length

LIVERPOOL, GOOLE & FLEETWOOD SECTION
LMSR 1923-1928

NAME	TONNAGE	LENGTH	BREADTH	BUILDER & DATES
TSS Colleen Bawn (II)	1204	260'0"	35'7"	Vickers & Maxim 1903/1931
TSS Mellifont	1204	260'0"	35'7"	Vickers & Maxim 1903/1933

of 236'6". She sported a white hull for the Copenhagen run. (In post LMS years this has changed to a pale grey hull but the vessels were still known as the 'butter boats' having refrigerated space for this product).

'Saltmarshe' was actually built for the Wetherall S.S. Co. but acquired when relatively new. She was the first to be scrapped in 1932, 'Spem' followed in August 1933 and 'Douglas' was sold in 1937 to the Stanhope S.S. Company Limited being renamed 'Stancourt'.

The SS 'Rawcliffe' built in 1906 was a second hand purchase by the LYR and as new ships came off the stocks she was sold in 1932.

The SS 'Hodder', 'Ouse', and 'Alt' were built in 1910-1911 again by Dobson at Newcastle. The 'Ouse' became a war loss in 1940. 'Hodder' had been employed on the Hamburg service but after the end of the second World War she was tried on the west coast including the Holyhead-Dublin North Wall in 1946, losing her red funnel band in the process. The 'Alt' went for scrapping in 1954, the Dearne in 1956.

In 1914 two more vessels were built by Clyde S.B. and E. Co. Ltd. The 'Rye' was lost in 1918 but the Rother was on the Copenhagen route and re-opened the service on 28th October, 1945. She was sold for breaking up in 1956.

The LMSR ordered four steamers to make good the ravages of the 1914-1918 war and two were built by Beardmore at Dalmuir the SS 'Rye' (II) and 'Hebble' in 1924 and the other two 'Dearne' and 'Don', by Vickers also in 1920. All the ships were of the 1000 ton mark and 240' give an inch or two.

The 'Rye' was lost in 1941 but the other three returned to their pre-War routes, the 'Don' and 'Dearne' being on the Copenhagen service. The 'Dearne' was disposed of in 1957 and the 'Hebble' and 'Don' in 1958. The 'Aire' (II), 'Blyth' and 'Calder' (II), the A.B.C.s were turned out by Cammell Laird in 1931. The 'Calder' stranded and became a

total loss in 1932 but, the 'Aire' (II) lasted until sold for breaking in 1958 and the 'Blythe' in 1959.

The signatories to the Associated Humber Lines, 1935 were LMSR; Hull and Netherlands Steamship Company Limited; Wilsons & NER Shipping Company Limited; and LNER (GC section) from Goole, Hull and Grimsby to Rotterdam, Amsterdam, Antwerp, Ghent, Dunkirk and Hamburg, also to manage the LMSR service from Goole to Copenhagen.

GOOLE STEAM SHIPPING COMPANY TO LYR 1905
TO LMS 1923

SS Aire	696	212'5"	28'8"	Dobson 1886/1930
SS Calder	704	215'5"	28'5"	Dobson 1887/1926
SS Derwent	830	230'0"	30'7"	Dobson 1888/1931
SS Wharfe	914	245'0"	32'7"	Dobson 1890/1933
SS River Crake	672	202'1"	28'2"	Thompson 1877/1927
SS River Ribble	1111	245'0"	34'1"	Thompson 1891/1933
SS Nidd	996	235'0"	33'1"	Dobson 1900/1933
SS Mersey	1037	255'0"	36'1"	S.H.W.R.* 1906/1940
SS Irwell	1040	255'0"	36'1"	S.H.W.R. 1906/1954
SS Equity	924	247'5"	32'4"	Earle 1888/1931
SS Liberty	895	225'0"	33'1"	Earle 1890/1931
(Ex-Fleetwood) TSS Duke of Clarence	1489	312'5"	36'2"	Laird 1892/1930
SS Douglas	950	236'6"	32'1"	Clyde S.B. 1907/1937
SS Rawcliffe	866	215'0"	32'6"	Crown 1906/1931
SS Saltmarshe	930	215'0"	32'2"	Pickersgill 1907/1931
SS Spem	900	215'6"	32'2"	Dobson 1908/1933
SS Hodder	1016	240'2"	34'1"	Dobson 1910/1956
SS Ouse (II)	1004	240'2"	34'1"	Dobson 1911/1940
SS Alt	986	240'0"	34'1"	Dobson 1911/1954
SS Rother	986	240'0"	34'1"	Clyde S.B. 1914/1956
SS Rye (II)	1048	240'3"	34'2"	Beardmore 1924/1941
SS Hebble (II)	1040	240'5"	34'2"	Beardmore 1924/1958
SS Dearne (II)	1043	240'3"	34'2"	Vickers 1924/1957
SS Don (II)	1038	240'3"	34'2"	Vickers 1924/1958
SS Calder (II)	1107	240'5"	34'1"	Cammell Laird 1931/1932
SS Blyth	1107	240'5"	34'1"	Cammell Laird 1931/1959
SS Aire (II)	1108	240'5"	34'1"	Cammell Laird 1931/1958

*S.H.W.R. - Swan, Hunter & Wigham Richardson

*V.A. - Vickers-Armstrongs

Garston Docks.

The LMS inherited and added to a list of vessels, described as a fleet compilers nightmare, embracing a flotilla of dredgers, hoppers and sundry craft including one listed as 'stationary'.

'A' dating from 1874 was a steam hopper and lasted until 1933. 'B' another steam hopper built also in 1874 was disposed of in 1930. 'C' again built in 1874 survived well into the twentieth Century and 'D' of 1884 lasted until 1945 when in January of that year she was mined off Eastham.

The 'Stratton' built 1902, a steam hopper lasted until 1935 when broken up a Ardrossan Nos. '1' and '2' were stationary bucket dredgers broken up in 1911.

A grab hopper dredger 'North Western' no less was built in 1908 and survived until 1950.

'E' built in 1909 lasted into the 1940's, and 'Crewe', a bucket dredger built in 1909 went to Fleetwood in 1935 until scrapped in 1952.

The 'Flint', built in Holland went to the breakers at the same date. She was a sand pump dredger.

In 1911 the 'Rhyl', a somewhat larger vessel, was built, a grab and sand pump dredger, she survived to pass into ownership of the Docks and Inland Waterways Executive in 1950.

'Rosia', a hopper barge, was built in 1899 and ended up in Dublin, lasting until 1928.

The 'Dalmeny' and 'Queensferry', both steam hoppers, were built in 1914 and passed to D & I.W.E.

'F' built in 1924 another steam hopper 'Garstonia' built 1926, 'G' in 1927 and 'H' also of that date all survived to pass out of Railway ownership.

Garstonia was a stationary bucket dredger the others being steam hoppers.

A vastly different fleet to the Holyhead greyhounds, but essentially useful and necessary vessels in the muddy estuary of the Mersey.

The Clyde.

The Clyde steamers were an institution and the Glaswegians exodus, 'Doon the Watter' from the Broomielaw was in its heyday wondrous to behold.

The Clyde steamers' genesis stems back to Henry Bell's 'Comet', built in 1812 when this small paddle steamer appeared in the

MERSEY SECTION

NAME	TONNAGE	LENGTH	BREADTH	BUILDER & DATES
SS 'A'	257	136'	23'1"	T. Brassey 1874/1933
SS 'B'	258	136'	23'1"	T. Brassey 1874/1930
SS 'C'	258	136'2"	23'1"	T. Brassey 1874/--?
SS 'D'	262	134'	23'1"	Duncan 1874/1946
SS 'Stratton'	383	153'5"	26'5"	Walker 1902/1935
SS 'North Western'	874	190'	35'1"	Ferguson 1908/1950
TSS 'E'	558	160'	32'1"	Ferguson 1909/194-?
SS 'Crewe'	409	148'	35'1"	Ferguson 1909/1952
SS 'Flint'	--	--	--	Smit 1910/1952
TSS 'Rhyl'	988	200'	38'1"	Ferguson 1911/1950
SS 'Rosia'	462	164'	27'1"	Walker 1899/1928
SS 'Dalmeny'	--	--	--	? 1914/1950
SS 'Queensferry'	--	--	--	? 1914/1950
SS 'F'	--	--	--	? 1924/1950
'Garstonia' (stationary)	--	--	--	Ferguson 1926/1950
SS 'G'	--	--	--	Robb 1927/1960
SS 'H'	--	--	--	Robb 1927/1960

All the above vessels are dredgers, hoppers or river service craft.

Clyde and in the sheltered waters could run regular services. It should be remembered that until this important event, Helensburgh and Gourrock were the only established towns and as principal watering places were patronised by the well to do. The outer reaches into the Firth proper were undeveloped, Dunoon being a Highland Clachan, and Rothesay a fishing village.

The coming of the railways hastened the transformation of these small villages.

The earlier Clyde steamers were often captained by the owner, the growth of larger companies coming later and the railways ran steamers in their own names or formed separate companies for this purpose. Desmond Banks writing in 'The Clyde Steamers' comments that at the turn of the century the various companies provided the Firth with the most excellent though possibly uneconomic service which ever existed. The passenger travelling at almost any time of day could usually choose between steamers of different fleets. The author of this paper remembers that during a holiday at Dunoon in 1951, there were plenty of ships giving an excellent service and if prepared to wait

20 minutes or so, it was possible to choose your favourite vessel, in this case P.S 'Jupiter' more often than note.

In 1923 the Caledonian and Glasgow and South Western Railways became members of the LMSR and the Caledonian Steam Packet Company also came under the control of the LMSR.

In 1928, David MacBrayne Limited came under joint ownership of LMSR and Coast Lines Limited. In 1937 the LMSR also bought the Williamson-Buchanan fleet and also the vessels of Turbine Steamers Limited. In connection with this latter firm it is of interest to note that in 1901 a unique steamer appeared on the Clyde, the 'King Edward', the first turbine passenger steamer built by the famous Denny Brothers Limited at Dumbarton. With the LMSR taking control of the foregoing Companies, the North British Railway, established at Helensburgh was absorbed into the LNER so that by 1936 there were no steamers operating in which the Railway Companies had no interest. The consist of the LMSR amalgamated fleet was as follows.

Duchess of Argyll, Duchess of Rothesay,

Duchess of Fife, Marchioness of Breadalbane
Caledonia, Glen Sannox, Mercury, Glen Rosa,
Jupiter, Juno and Atalanta.

The new LMS livery was applied, black hull, white saloons and paddle boxes, yellow funnel with red band below the black top. Reference is made elsewhere to this peculiar funnel colouring adopted by the L&YR from the Goole Steam Shipping Company Limited and it is pertinent to note that although popular opinion was against the red band which was omitted in view of the opposition, the red band on the funnels of the G & SWR ships was wider than on any others!

The 'Glen Sannox' was replaced in 1925 by a fast turbine steamer bearing the same name. The 'Juno' was withdrawn when in 1932 the turbine steamer 'Duchess of Hamilton' came into service.

In 1933 the 'Caledonia' and 'Mercury' two popular paddle steamers were withdrawn after forty years service. Two new paddlers bearing the same names replaced them. The 'Marchioness of Breadalbane' having spent most of her life on the Wemyss Bay-Largs-Millport route, came onto the Holy Loch service in 1934 the last year of her life. The 'Jupiter' mainly employed on Ayr excursions spent her last summer, 1935, on the Largs and Millport station and after the 1936 season, the turbine steamer 'Atalanta' was withdrawn after thirty years service. She was the first turbine ship to be withdrawn by the LMSR on the Clyde.

The 'Glen Rosa', after many years on the Largs-Millport route was withdrawn in 1939 after 46 years of service, whilst the 'Duchess of Rothesay', who had earned distinction by towing a German Zeppelin into harbour during the 1914-18 war again joined up in 1939 and served as a minesweeper, having made four runs at the evacuation of Dunkirk.

In 1946 after 51 years afloat she was sold to Dutch owners.

The 'Queen Empress' joined the LMS fleet in 1936 and in 1937, two new paddle steamers replaced the 'Juno' and 'Jupiter' perpetuating their names.

During the 39-45 War, the 'Mercury' was lost minesweeping and the 'Juno' II was bombed and sunk. The 'Queen Empress' enjoyed a distinguished war record but never returned to the Clyde being disposed of in 1946.

At the end of the independence of the LMSR the following ships were in service.

CALEDONIAN STEAM PACKET COMPANY LTD. 1922

PS 'Caledonia' (I)	244	200' 4"	22' 1"	Reid 1889/1933
PS 'Marchioness of Breadalbane'	338	200' 4"	22' 1"	Reid 1890/1935
PS 'Marchioness of Lorne' (I)	295	200' 0"	24' 0"	Russell 1891/1923
PS 'Duchess of Rothesay'	338	225' 6"	26' 1"	Thomson 1895/1946
PS 'Duchess of Fife'	329	210' 3"	25' 0"	Fairfield 1903/1952
TrSS 'Duchess of Argyll'	593	250' 0"	30' 1"	Denny 1906/1952
(Loch Awe)SS 'Countess of Breadalbane' 95		99' 9"	14' 0"	Hanna & Donald 1882/1936

FROM THE LOCH TAY STEAMBOAT COMPANY

SS 'Carlotta' (Wood)	23	56' 0"	11' 2"	Gilford 1882/1923
TSS 'Queen of the lake'	152	110' 1"	20' 1"	Ailsa 1907/1950

GLASGOW & SOUTH WESTERN RAILWAY CO. (1922)

PS 'Glen Sannox' (I)	610	260' 5"	30' 1"	Thomson 1892/1933
PS 'Mercury' (I)	378	220' 5"	26' 0"	Thomson 1892/1933
PS 'Glen Rosa'	306	200' 0"	25' 0"	Thomson 1892/1939
PS 'Jupiter' (I)	394	230' 0"	28' 1"	Thomson 1896/1935
PS 'Juno' (I)	592	245' 0"	29' 1"	Clydebank 1898/1932
PS 'Troon' (tug)	130	100' 0"	19' 1"	Rennoldson 1902/1930
TrSS 'Atalanta'	486	210' 4"	30' 1"	J. Brown 1906/1937

AYR HARBOUR COMMISSIONERS TO G.SWR 1919

PS 'Ayr' (III)	124	90' 0"	19' 2"	Rennoldson 1897/1930
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'Duchess of Hamilton', 'Duchess of Montrose', 'Glen Sannox', 'Duchess of Argyll', 'Marchioness of Graham', 'Duchess of Fife', 'Caledonia', 'Jupiter' and 'Marchioness of Lorne'.

This last named ship, one of the smaller vessels and not famed for speed is reported to have entered a daily contest with the LNER 'Lucy Ashton' also not known to have

broken any speed records, for priority at Hunters Quay pier in the twilight of the individual railway's existence, 1946. Mention must also be made of three small motor vessels which served as ferries, the 'Wee Cumbrae', 'Ashton', and 'Leven', the former between Largs and Millport and the other two between Gourrock and Dunoon.

LMSR & CALEDONIAN S.P. CO. LTD. 1923 - 1935

TrSS 'Glen Sannox' (II)	664	249' 9"	30' 1"	Denny 1925/1954
PS 'Walney' (tug)	204	120' 0"	21' 1"	Renoldson 1904/1930
(to Troon from Barrow Section LMSR)				
TrSS 'Duchess of Montrose' (II)	806	262' 0"	32' 0"	Denny 1930/1965
TrSS 'Duchess of Hamilton' (II)	795	262' 0"	32' 1"	Harlandworff 1932/
PS 'Mercury' (II)	621	223' 8"	30' 1"	Fairfield 1934/1940
PS 'Caledonia' (II)	624	233' 6"	30' 1"	Denny 1934/1970
PS 'Marchioness of Lorne' (II)	449	199' 5"	27' 1"	Fairfield 1935/1955
TSMV 'Wee Cumbrae'	37	59' 7"	12' 5"	Denny 1935/1953

WILLIAMSON & BUCHANAN STEAMERS LTD.

TO C.S.P. CO. LTD. 1935; W.B. STEAMERS (1936) LTD.; C.S.P. CO. 1943-52

TrSS 'King Edward'	551	250' 5"	30' 1"	Denny 1901/1952
PS 'Queen Empress'	411	210' 0"	25' 6"	Murdoch & Murray 1912/1946
TrSS 'Queen Mary' II	870/1014	252' 5"	35' 1"	Denny 1933/

LMSR. C.S.P. CO. LTD. WILLIAMSON & BUCHANAN STEAMERS (1936) LTD.

(Loch Awe) TSMV 'Countess of Breadalbane' (II)	106	90' 9"	18' 1"	Denny 1936/
TSS 'Marchioness of Graham'	585	220' 2"	30' 1"	Fairfield 1936/1958
TSMV 'Anan Mail'	137	95' 1"	20' 1"	Denny 1936/1951
PS 'Jupiter' (II)	642	223' 6"	30' 1"	Fairfield 1937/1941
PS 'Juno'	642	223' 6"	30' 1"	Fairfield 1937/1941
TSMV 'Ashton'	38	60' 0"	13' 5"	Denny 1938/1965
TSMV 'Leven'	38	60' 0"	13' 5"	Denny 1938/1965
TSS 'Carrick' (Dredger)	846	176' 1"	40' 1"	Simons 1938/1950

Tilbury Section.

One can imagine that man has always wanted to get to the other side of the river and the Tilbury-Gravesend crossing is no exception to the rule.

In 1862 the LMSR took over the working of this short river crossing which had commenced in 1850.

The oldest vessel to come into LMSR ownership was the TSS 'Carlotta', the first screw steamer on the service, built in 1893 and lasting until 1930 when this iron ship was broken up. Between 1901 and 1911 four sister ships were built by Messrs. A.W. Robertson & Co. London. They were the 'Rose', 'Catherine', 'Gertrude', and 'Edith', all coming into LMS ownership in 1923 when their funnels exchanged the black

livery for the new standard LMS colours. In 1932, the 'Gertrude' was sold to the New Medway S.P.Co.Ltd. who renamed her 'Rochester Queen' and used the vessel on the Rochester-Sheerness service.

The other three steamers passed to the control of the L.M.R. and thence to E.R. on 20th February, 1949, surviving until 1961 when they were replaced.

In 1924 the LMSR took delivery of T.S.S. 'Tessa' from the Lytham Ship Building and Engineering Company. She was the first of the line to be equipped to carry vehicular traffic, having clear decks fore and aft with no masts, the navigation lights being carried on the funnel which started life with a Navy cowl top later removed.

Girls names were perpetuated in 1927 when the TSS 'Mimie' entered service. She was a slightly larger version of the 'Tessa' and generally similar. Both these vessels transferred to Eastern Region on 20th February, 1949, being scrapped in 1964 on the opening of the Dartford-Purfleet tunnel.

FOOTNOTE.

Although before LMS ownership of the vessel, the following notes on the 'Duke of Clarence' supplied by Mr. D. Rowland are of interest. They are taken from 'Railway and travel monthly', October 1911.

"It will be remembered that last year the Lancashire and Yorkshire Railway made remunerative use of the return from Hull of the magnificent steamer 'Duke of Clarence' to her winter quarters on the West Coast of Lancashire. This autumn the same idea will be carried out, but the 'Duke of Clarence' in the course of her four days' cruise from Hull to Fleetwood will this year call at St. Heliers (SIC), Jersey, remaining there from 3.00 a.m. until 4.00 p.m., and giving passengers an opportunity of visiting this delightful island.

The steamer leaves the Riverside Quay at about 6.00 p.m. on Saturday, the 30th September and reaches St. Helier on 2nd October and arrives Fleetwood about 8.00 a.m. on Wednesday, the 4th October. The fares for the trip which include rail from any station on the Lancashire and Yorkshire Railway to Hull, Steamer trip, including meals and attendance to Fleetwood and by rail either direct or via Blackpool where ten days are allowed to the starting point range from £3 12s. 6d. to £4 12s. 6d. The trip is one which cannot be beaten for cheapness, comfort and interest."

TILBURY SECTION

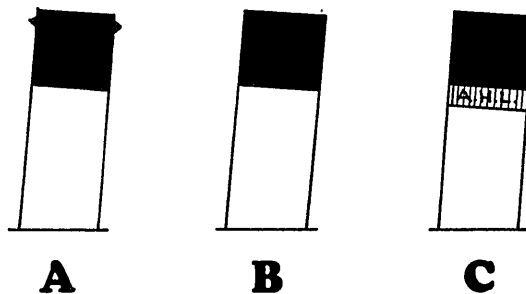
NAME	TONNAGE	LENGTH	BREADTH	BUILDER & DATES
TSS 'Carlotta'	261	124'7"	32'5"	Robertson 1893/1930
TSS 'Rose'	259	124'7"	24'7"	Robertson 1901/1959
TSS 'Catherine'	259	124'5"	24'7"	Robertson 1903/1961
TSS 'Gertrude'	255	125'0"	26'7"	Robertson 1906/1932
*SS 'St. Martin' (dredger)	800	187'5"	38'0"	Lobnitz 1894/1933
TSS 'Edith'	283	131'6"	28'5"	Robertson 1911/1961
SS 'Rockford' (dredger)	252	110'5"	25'1"	Zaltbommel 1924/1944
TSS 'Tessa'	371	134'1"	30'0"	Lytham S.B. 1924/1959
TSS 'Minnie'	464	145'3"	39'1"	Ferguson 1927/1959

*'St. Martin' to Heysham c. 1924

All other vessels existing 20.2.59 transferred to E.R.

Mr. Roland continues "Whilst such enterprise hardly warranted the inclusion of a panel 'Jersey' amongst all the L&Y places commemorated in the awning of Victoria Station, the idea of proffering four sovereigns to the booking clerk at Bacup and requesting 'fourteen day return to St. Helier, please' is one which appeals adding 'Mind you, there would be a rather long wait if one missed the train'".

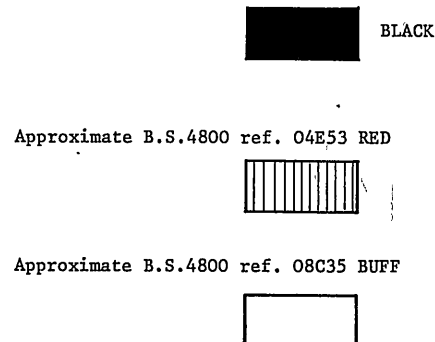
Livery Notes, LMSR.



A Cowl Top; Heysham Ships only
 Removed from 'Duke of Rothesay' 1935
 'Duke of Argyll' 1935
 'Duke of Lancaster' 1937

B L.M.S. Standard 1925 onwards

C L.M.S. adopted 1923-1925
 L.Y.R., L.M.S. Goole ships 1923-1935
 'A.H.L.' 1935 - onwards on red band



Hull	Black Red Boat-topping Fine white line just below but following the sheer strake
Upperworks	White/varnished teak
Funnel	Buff, with black top
Masts, derriicks	Buff
Goole Section only	
Hull	Black, red boottapping Buff edging to bulwarks or deck edge
Upperworks	Brown, Bridge white/varnished teak
Funnel	Buff, black top with inter- vening red band
Masts and derricks	Buff
Hull, refrigerated vessels	White

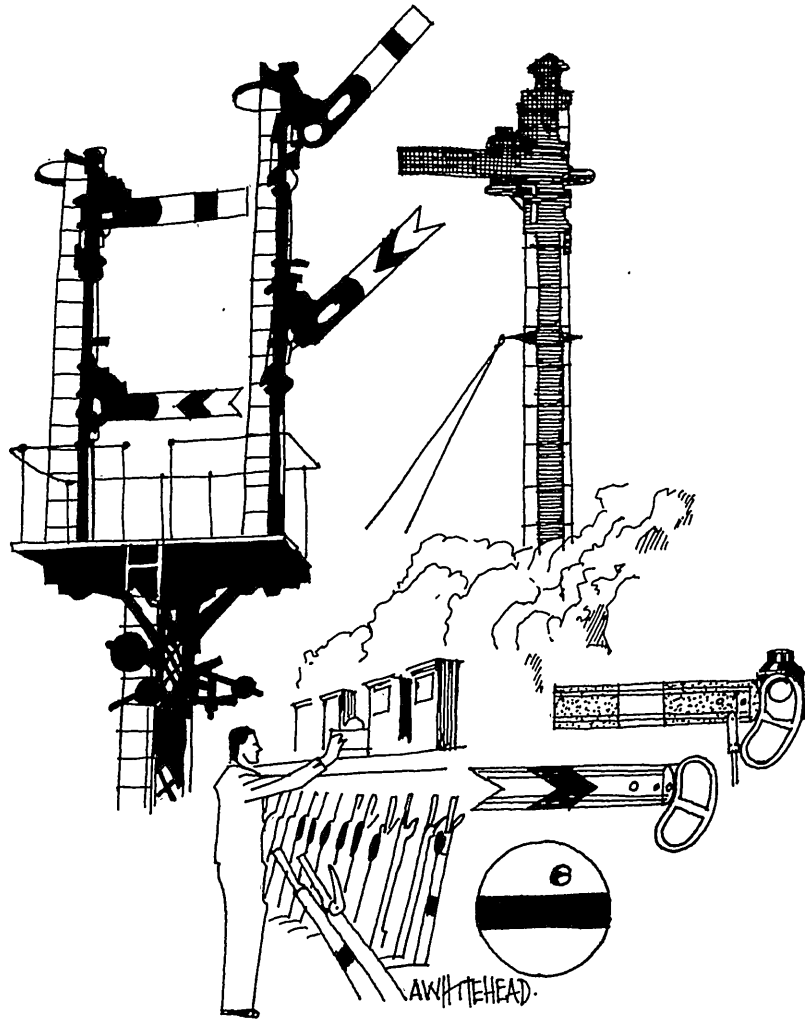
This fleet list contains the vessels known by the author to comprise a list of LMS shipping and he will be most grateful if any reader can add further information.

The dates in the 'Builders' column denote dates of construction and disposal so far as known.

Bibliography.

- 'Sea Breezes' (Journal of Commerce & Shipping Telegraph Limited)
- 'Railway and Other Steamers' (Duckworth and Langmuir)
- 'Clyde River & Other Steamers' (Duckworth and Langmuir)
- 'Railway History in Pictures' (Clark and Patmore)
- 'The Clyde Steamers' (Desmond Banks (1947))
- 'British Nationalised Shipping' (Clegg and Styring 1969)

8



SIGNALLING

I think it should be stated at the outset that our immediate concern was getting things right for the modeller and to be able to say which design of signal could appear on any stretch of LMS line at any given time. This is not to say that we have a record of every LMS signal at every place, but it does mean that given a photograph showing signals at the station or whatever section of line being modelled, suitable photographs and/or drawings can be produced to enable reasonably accurate models to be constructed. This in turn does not mean we have drawings of all LMS pre-group signals, as drawings are hard to come by of contractors signals used up to grouping by the NSR, LTSR and Scottish Companies. In these instances, the contractors catalogues seem to be the only source and if anyone can help in this direction, please contact the writer.

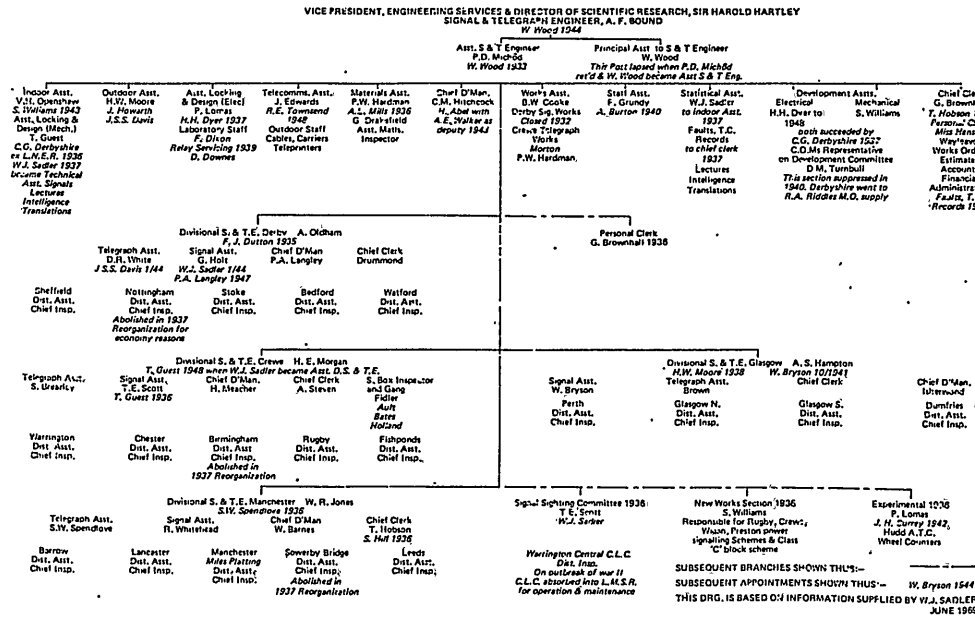
It can be appreciated that for the task outlined above there is, as yet, little time to study in any great detail such items as facing point locks, block instruments, locking etc., although information on many of these items is to hand, it is generally speaking of no consequence to the small gauge modeller.

Signalling on the LMS came into two distinct periods, firstly, 1923 to 1929, and secondly, 1929 to Nationalisation.

Considering now the 1923 to 1929 period.

When the LMS was formed at the grouping, the civil engineering department was divided into four divisions. Scottish, embracing all companies North of the border - Derby, comprising mainly of the Midland Railway - Crewe, comprising of the LNW, Furness and North Staffs and others - Manchester, comprising of the L & Y. In those days the Signal Superintendents were responsible to their Divisional Civil Engineers and the Telegraph Superintendents were responsible to the Electrical Engineer abiding by the Divisional Boundaries.

The LNW Signal Superintendent, J.T. Roberts, retained his position at Crewe - the ex L & Y (then LNWR 'B' Division) Superintendent, R.G. Berry, retained his post at Hunts Bank, Manchester and L.P. Lewis, ex C.R., took the job in Scotland, with W.C. Acfield, the ex Midland Signal Superintendent, retaining his post at Derby.



The L.M.S. S. & T. Engineers Departmental organization on the transfer of H.Q. to Euston House, March 1934.

From this it can be seen that there was really no change in the signalling policy as each superintendent soldiered on very much as he had always done - each pursuing his own ideas.

The Scottish companies were provided with the same signals as they had always used. The Midland Division used Midland Signals, the Western Division used LNW Signals and the L & Y used its Standard Signals.

There were, however, some differences as for example, the F.R. began to use LNW equipment as did the NSR, up to 1925 when the Stoke District was formed then coming under the Derby Division when Midland Signals would be used.

When the L & Y and LNW amalgamated, it was agreed that LNW Boxes and Lever Frames would be utilised and that L & Y Signals would be retained.

During this period the Railway Executive Committee was sitting, one project of which was to standardise throughout the country Signals and Lever Frames and it appears that most of the experimental work was carried out at Derby under W.C. Acfield.

The first Upper Quadrant Signals were erected in Derby Signal Works Yard and on the main line at Sawley about 1925 using telegraph poles - at least two still exist - one of them at Toton and one at Masborough South Junction. Upper Quadrant Signals were not, as far as we know, erected on any other Division during this period.

The M.R. frame was also basically the R.E.C. standard having its lever centres reduced to $4\frac{1}{2}$ " from the M.R. 6".

In fact apart from one being supplied to Mr. Bound for Masborough West Junction box on the LNER (G.C.), no other Company except the LMS used it and no signal manufacturer ever sold it elsewhere, although the British Power Railway Signal Company did certain work to this end.

We therefore see that the practices and designs of the major LMS Constituents prevailed up to 1929 and no doubt for a year or two afterwards. This meant that the LNW preference for great lofty signals with co-acting arms standing outside the four lines of way was still pursued - the celebrated Rugby "Bedstead" being a good example. The Midland Division stuck to Splitting Distant, a practice not then recommended following revisions to the 1925 Regulations by the MOT Glasgow, St. Enoch, although in the second period of our story when it was resigalled with Colour Lights still retained the Scottish practice of having ground-mounted Sykes banner signals instead of position light ground signals.

It was obvious that this state of affairs could not go on as the staff of the General Superintendents Office at Derby found all these various practices very confusing and working via their respective Civil and Electrical Engineers made communication very difficult. Cases arose where a distant signal which could be better electrically operated retained its mechanical operation because the Signal Superintendent did not wish to lose jurisdiction over the signal.

The GWR had long since vested all its signal and telegraph interests in a consolidated Signal and Telegraph Department and so too did the LMS as in 1929 Mr. Arthur Frank Bound (Ex GCR and LNER) became the first Chief Signal and Telegraph Engineer of the LMS which was a notable step forward, bringing us to the second period from 1929 until Nationalisation.

The basic Divisional set-up remained with the Civil boundaries being adhered to, although of course personnel had changed.

In 1927 both W.C. Acfield of Derby and J.T. Roberts of Crewe had retired and H.E. Morgan, the Deputy of Derby and Alfred Oldham of Crewe instead of getting their respective Chiefs jobs were changed over, sending Oldham from Crewe to Derby and Morgan from Derby to Crewe. This was obviously a pre-Bound attempt to rationalise practices. In Mr. Bound's organisation, Oldham retained charge of Derby Division, Morgan retained the Crewe Division. R.G. Berry of Manchester retired due to ill health with W.R. Jones taking over and A.S. Hampton took charge of the Scottish affairs.

It is obvious that Bound could not do wonders overnight and the pre-group designs would continue for a little longer, but when the H.Q. was moved into Euston House from Derby in 1934 things really began to move with design staff taken on and an Engineering Circular System really getting under way sending all kinds of S. & T. information to the Divisions and Districts, a system is still used by the LM Region of BR today.

One of Bound's first orders was that the Upper Quadrant was standard for new and renewed signals and no Lower Quadrant signals were to be used.

The first LMS standard U/Q designs were basically the LNW posts perpetuated with Upper Quadrant arms and fittings.

Bound's first Chief Draughtsman was Mr. C.M. Hitchcock of Crewe although this was not why LNW items were standardised the reason being that LNW design had large butt ends giving long life in the ground (a fact still

evident today) and that Crewe had a very good timber shop.

Wood at about this time became scarce and expensive and following collapsing signals wood gradually gave way to steel. Various combinations of wood and steel main components were designed and used, finally giving way to all steel types. Lattice and broad flanged beams were utilised for main stems before tubular steel. Designs using spun concrete poles and old rails were also devised, with a few being erected.

Bound was also a very keen supporter of the Colour Light, as not only did the driver get the same indication by day as by night, fog signalmen could be dispensed with saving manpower costs.

His tour of America resulted in Marker Lights being adopted on his Euston/Watford Glasgow St. Enoch and Mirfield, the latter being the only example of the 'speed' signalling principle in Britain.

Bound also advocated the Induction method of ATC using the Hudd System which with later modification by Mr. John Currey and his team became the BR System of AWS.

Another interesting and little known experiment carried out from 1935 until the outbreak of War was with AGA Flashing Light Signals.

Working on the shipping buoy principle, a flashing light was mounted on a short post some 200 yards on the approach side of a distant signal, giving 120 flashes per minute, and having the same colour indications as the signal it repeated. About 12 were ordered (some as spares) which were utilised at locations where sudden fogs were likely. The experiment was considered successful, but World War II and ARP Regulations stopped its use and after the War with the considerable extension of the National Grid supplies of electricity were more readily available in the remote areas where distant signals were often located, the original intention being to use flashing lights as an alternative to isolated Colour Light Distant Signals. (If anyone has a photograph of a flashing light distant, again, please contact the writer).

This then is briefly the tale of LMS Signals and the book 'LMS Signals' by Roy Anderson and L.G. Warburton covers in detail the development of Signals and Signal Boxes (now out of print).

If anyone can assist further, especially regarding drawings of the various contractors signals and signal boxes, then we should like to hear from you.

1 Company	2 Equipment Used Up to the Grouping	3 Equipment Used Up to Mr. Bound's Appointment on 1.4.1929	4 Equipment Used After 1.4.1929	5 Availability of Drawings for Column 2 Items	6 * Availability of Kits or Parts in 4 mm Scale for Column 2 Items	7 Remarks
Caledonian Railway	Stevens Equipment and Frames	Stevens Equipment and Frames	LMS Equipment and REC Frames	NIL	) Reasonable Models) may be possible) to be made from) Ratio Kit U/Q 80 ) ) ) ) ) ) ) )	) The majority of) all Scottish) Companies) signals appear) to have under-) gone overhaul) with U/Q Arms) following the) standardisation) on Bound's) arrival there.
G. & S.W.R.	- ditto -	- ditto -	- ditto -	NIL		
Highland Railway	McKenzie & Holland Equipment and Frames	McKenzie & Holland Equipment and Frames	- ditto -	NIL		
M. & G.N.	M.R. Signal Boxes, Signals Tumbler Frames, Level 'X' gates used up to c 1905 after which basically G.N. equipment was used with somersault arms on concrete posts and bracket.			M.Rly Signals featured in R.M. June to December 1971	Certain parts for M.Rly. items to special order from Ks.	Whitaker single line tablet exchanges used throughout the line.
S. & D.	Ex LSWR apparatus including Stevens Frames.	S.R. equipment	S.R. equipment		Ratio LNER kit UQ/80 could be used for lattice post types.	- ditto -
C.L.C.	Rly.Sig. Co.		At the beginning of World War II, the line was integrated with the LMS using LMS S & T equipment	See under LMS for LMS items	See under LMS for LMS items	
					* See model press for announcement of availability.	
London & North Western Railway	Saxby & Farmer up to c 1875 then standard LNWR equipment manufactured at Crewe. LNW catch handle lever frames.	Standard LNWR equipment and catch handle frames.	Standard LMS designs. REC lever frame.	LNW Bracket Signal, Page 14. LMS Signals, Oxford Pub.Co.	Ratio Products Kit No. LQ/71.	Many LNW Signals modernised by the LMS with U/Q arms and fittings

1 Company	2 Equipment Used Up to the Grouping	3 Equipment Used Up To Mr. Bound's Appointment on 1.4.1929	4 Equipment Used After 1.4.1929	5 Availability of Drawings for Column 2 Items	6 Availability of Kits or Parts in 4 mm Scale for Column 2 Items	7 Remarks
Lancashire & Yorkshire Rly.	Standard L & Y equipment produced at Horwich Works and the Railway Signal Co. Early frames by Gloucester C & W. Later frames from Railway Signal Co.	On 1922 absorption with LNW Horwich Signal Works soon closed, but L & Y Signals still utilised as patt- erns etc. were transferred to Crewe. LNW designed signal boxes were then utilised with LNW catch handle frames.	- ditto -	1912 Bracket Sig. P.4 Magazine P.18 May 1971. A comprehensive set of drawings is at present being prepared of all types of L & Y Signals by T.T. Sutcliffe, (L & Y.Soc.) & L.G. Warburton (LMS.Soc.).	Signal arm stop, 3 types of finial, 3 types of CI brackets, various signal arms, ground signal posts from A.H. Bastable, Redlands, 38 Cradoc Road, Brecon.	Many L & Y Signals modernised by the LMS with U/Q arms and fittings.
Furness Railway	Tyers Signals and Frames.	Ex.LNWR Std. equipment, signal boxes and catch handle frames.	Standard LMS designs and REC Frames.	Single Post Signals, Model Engineers, 29.4.41. Drawings in preparation by L.G. Warburton.	Nil, although a reasonable single lattice post signal could be made from Ratio LNER kit UQ/80.	Many FR signals modernised with U/Q arms and fittings. The wood post signals with climbing staples or hoops also had ladders fitted.
London Midland & Scottish Railway	Various See Constituent Company sheets	MR, L & Y, LNW, CR, designs perpetuated in respective engineering divisions	LMS Standards were evolved for all types of signals and signal boxes	Virtually all designs of LMS Signals and signal boxes and their development are covered in the book by L.G. Warburton & Roy Anderson - "A Pictorial Record of LMS Signals" by the Oxford Publishing Co., Drawings for various C/L Signals have been prepared by L.G. Warburton. A series on LMS colour light with drawings is featured in the MRO for October, November and December 1972	Ratio produce 4 kits which singly or combined will produce most types of LMS Standard Signals. Kits UQ/80 LQ/71 UQ/70 PT/50 See article by L.G. Warburton Model Railways January/1972	Colour Light signalling scheme of different types and by different Companies were commissioned at Bow Road Barking, Mirfield, Euston- Watford, Man.Vic & Exchange, St. Enoch, Crewe, Wigan, Rugby etc.

1 Company	2 Equipment Used Up to the Grouping	3 Equipment Used Up to Mr. Bound's Appointment on 1.4.1929	4 Equipment Used After 1.4.1929	5 Availability of Drawings for Column 2 Items	6 Availability of Kits or Parts in 4 mm Scale for Column 2 Items	7 Remarks
Mersey Railway	Railway Signal Co. & Westinghouse Brake & Signal Co., Colour Lights and all electric points in tunnel sections.	Ex.LNW mechanical equipment, as necessary.	Standard LMS	NIL Drawings do appear in the manufacturers catalogues.	NIL	
Maryport & Carlisle	Stevens & Tyers	Ex.LNW mechanical equipment.	Standard LMS	- ditto -	Reasonable repre- sentation may possibly be made using Ratio LNER kit U/Q/80.	
Midland Railway	M.Rly designs produced at Derby Signal Works and MR pattern lever frame. Standard MR Signal Boxes.	Ex.MR designs produced in Derby Signal Works. U/Q Signals used on round posts from c 1925 to c 1929. Ex.MR lever frames and REC frames.	Standard LMS equipment with occasional ex.MR items such as CI Brackets. REC Standard Frame.	All basic types of signals featured in a series of articles by LGW in Railway Modeller June to December 1971.	Etched brass parts available from Colin Waite, 20 Berwick Road, Wood Green N22.	Many MR signals modernised by the LMS with U/Q arms and fittings
London Tilbury Railway Signal Co., & Southend Railway equipment and frames until the Company was absorbed by the Mid. Rly. in 1913 when Standard MR items were used.		Standard MR designs and frames.	Standard LMS equipment and REC frame.	NIL (Drawings are of course in Rly.Sig.Cos. catalogues).	NIL although certain Ratio UQ/80 items could be utilised.	
North Stafford Railway	McKenzie & Holland	Ex.LNW Standards as NSR came under Crewe Division. In 1927 Stoke District was created in the Derby Division & S & T work was transferred to Derby with ex.MR designs used.	Standard LMS and REC frames.	NIL (Drawings in manufacturers catalogue).	NIL	

9



OTHER ACTIVITIES

[Faint, illegible handwritten text]

The LMS took over 40 hotels spread throughout the system with a capital value of £4 million, and became the owners of the largest hotel business in Europe.

The railway hotels were renowned for high standards of cuisine and elegant furnishings, and the majority enjoyed unrivalled positions adjacent to stations, important for travellers in the years before the car was commonplace.

The Euston Hotel had been the first railway-owned hotel in the world when opened in 1839 and it was still regarded as a place of pompous grandeur in LMS ownership. The hotel chain was spread throughout the system and during the period 1923-1939 four hotels were found to be redundant or obsolete and closed, whilst two new ones were opened and a further three were completely rebuilt.

Despite the closures and sales of properties, the capital employed in the hotels rose from £4m in 1923 to over £5.1m by 1929, and further sums followed.

Income was substantial, £3.3m in 1923 and slightly less in 1938 £3.08m and after overheads a useful profit was returned - 1923 £571,000 1938 £330,900. In relation to capital employed this represented an earnings ratio - 1923 12½% reducing to around 5-6% in 1938, yet still better than a straightforward investment income when interest rates were low.

In addition to the hotels in the LMS network, a further four were owned in Ireland, three through the N.C.C. and one through the D & N & G Rly.

Advertising panels listing the principal hotels appeared in public timetables, passenger compartments and on station noticeboards.

The name of the hotel often indicated earlier company ownership and in addition the telegraphic addresses bore similar witness with the North Western's "Bestotel" and the Midlands "Midotel" - yet all acclaimed "the best". Up to 7,000 staff were employed in the Hotels Department, including those staffing Company Laundries, refreshment rooms and kiosks.

Allied to the hotels, the LMS owned three golf courses adjacent to Scottish hotels, and a holiday camp at Prestalyn in partnership with Thos. Cook & Sons.

An interesting feature is that the Impresario Henry Hall was employed by the LMS in charge of dance orchestras. Based at the famous Gleneagles Hotel he later left the Company to join the B.B.C.

In 1939, 28 hotels were open and in common with many organisations the Government requisitioned part of the chain for war service.

Six hotels were completely taken over and in addition parts of others were similarly claimed, until 14 hotels still plied for paying visitors. From 330,000 guests in 1938 the numbers rose during the war years to 580,000 in 1943, a substantial increase. Even in the darkest days of war when many establishments suffered considerable damage, none were completely closed down. Staff problems were inevitably to follow conscription of the hotel men, and women in considerable numbers, and old employees returned to service to keep the hotels open.

A Chief Hotels Superintendent had responsibility for the entire hotel, catering and laundry operation - in this latter respect some 39 million "pieces" of laundry were washed in 1938.

Silverware and china taken over in 1923 were gradually replaced by items with the LMS insignia but many pre-group items survived into public ownership in 1948.

After the war some attempts were made to raise standards in the hotels to their former prestigious levels but the nationalisation era commenced when many food controls were still stringent and the final years of LMS ownership were occupied in recovering from the effects of the war.

LMS HOTELS - 31st December, 1929

Owned and Worked by the Company.

<u>Place</u>	<u>Name</u>		
Birmingham, New St.	Queens Hotel	- Heavy war damage	Open in 1946
Bletchley	Station	- Closed by 1935	-
Bradford	Midland	- War damaged	-
Crewe	Crewe Arms	-	Open in 1946
Derby	Midland	- Very minor damage only	Open in 1946
Furness Abbey	Furness Abbey	-	-
Holyhead	Station	-	Open in 1946
Keighley	Queens	- Closed by 1935	-
Leeds	Queens	- Completely rebuilt	Open in 1946
Liverpool, Lime St. Stn.	North Western	- Closed by 1935	-
Liverpool, Exchange Stn.	Exchange	- Heavy war damage	Open in 1946
Liverpool	Adelphi	- Heavy war damage	Open in 1946
London, Euston Stn.	Euston	- Heavy war damage - suffered direct hit	Open in 1946
London, St. Pancras	Midland Grand	- Closed by 1935	-
Manchester	Midland	- Heavy war damage	Open in 1946
Morecambe	Midland	- Requisitioned in 1939	-
Preston	Park	-	Open in 1946

Scotland

Ayr	Station	-		Open in 1946
Dornoch	Dornoch	-	Requisitioned in 1939	-
Dumfries	Station	-		Open in 1946
Edinburgh, Princes St. Stn.	Caledonian	-		Open in 1946
Glasgow, Central Stn.	Central	-	Part requisitioned	Open in 1946
Glasgow, St. Enoch Stn.	St. Enoch	-	Part requisitioned	Open in 1946
Gleneagles	Gleneagles	-	Requisitioned in 1939. International Reputation. Two magnificent Golf Courses. 9 Tennis Courts.	-
Inverness	Station	-		Open in 1946
Kyle of Lochalsh	Station	-	Part requisitioned in 1939. Modernised and a new wing added in 1934. Deep sea fishing.	Open in 1946
Strathpeffer	Highland	-	Requisitioned in 1939	-
Turnberry, Ayrshire	Turnberry	-	Requisitioned in 1939. Two Golf Courses. Four Tennis Courts..	-

Hotels Owned but not Worked by the Company at 31st December, 1929

Alderley Edge	Queens Hotel	-	Closed	-
Leek	Churnet Valley Hotel	-	Closed	-
Stoke-on-Trent	North Stafford Hotel	-	Later taken into LMS Management	Open in 1946

Jointly Owned and Operated

Perth	Station Hotel (LMS own two-thirds)			
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Hotels Purchased After 1929

Stratford-on-Avon	Welcombe Hotel	-	Listed as 'Once a stately residence standing in its own magnificent grounds'. Requisitioned in 1939	
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LMS Hotels in Ireland

Belfast	Midland Station)	-	War damaged
Larne	Laharna)		
Portrush	Northern Counties	)		N.C.C.
Greenore	Greenore	)		D.N. & G. Rlwy.

The LMSR role in the development of internal air transport in the United Kingdom, under the Railway Air Services Ltd. umbrella

The LMS and the other three railway companies were alive to the development of transport generally and in 1929 all four Companies succeeded in obtaining powers to own and operate aircraft and to provide passenger and freight air services - in fact to organise and maintain the full range of facilities required for such an operation.

The LMS Air Transport Act was passed on 10th May, 1929, but it was not until 21st March, 1934 that the LMS took active steps to set up an air service. The LMS and the other three, and British Airways, subscribed to the formation of a company "Railway Air Services Ltd."

However, in March 1931 the four railway companies made an arrangement with the then Imperial Airways Ltd. for urgent freight and parcels addressed to a destination on any air route operated by Imperial to be handed in at certain railway stations and forwarded at an inclusive freight charge. A similar joint air and railway service was operated in the reverse direction, goods being accepted by Imperial at any point on their routes for through transit to railway stations in the U.K. One hundred and forty stations in the U.K. were included in this scheme and the service commenced on 1st April, 1931, and the LMS and other companies had now entered the air freight business.

On 20th August, 1934, Railway Air Services Ltd. opened the London - Belfast route on behalf of the LMS from Croydon with calls en route to Belfast at Birmingham, Manchester and Ronaldsway, Isle of Man. This latter IOM call was omitted soon afterwards however, but only temporarily.

Railway Air Services were to provide the aircraft, and British Airways the flight personnel, and the various railway company routes were determined by the railway "zones" in the U.K. However, the railway companies were financially responsible for 'their' routes.

In 1934 the LMS through RAS were awarded the Royal Air Mail contract for the London - Belfast route and for the other routes also. However, this was soon lost for 1935, but regained again for 1936 and thereafter retained.

The Air Terminal for all RAS flights was at Victoria Station, London.

The initial LMS services to Belfast were operated with De-Havilland 10 seat Type 86 Dragon Rapides, and this service was later extended from Belfast to Glasgow.

Traffic for the period 20th August - 31st December, 1934 was:-

Mileage flown	98,787 miles
Passengers carried	1,037
Freight	4,760 lbs.
Mail carried	3,621 lbs.

- an active 4½ months !

In 1935 further developments took place and the London/Belfast/Glasgow service was advertised to include a call at Speke airport, Liverpool.

On 19th January, 1935 the LMS, together with the Isle of Man Steam Packet Co. Ltd. subscribed capital in equal shares to form the Manx Airway section of Railway Air Services Ltd., and on 19th April, 1935 a new service from Manchester via Speke and Squires Gate Airport, Blackpool, to the IOM was inaugurated. In 1935 over 600,000 miles were operated on LMS Services and 5,740 passengers carried with 17,186 lbs. of freight.

The first flight of the day left Glasgow (Renfrew) at 8.45 a.m., Belfast (Aldergröve) 9.45 a.m., Liverpool (Speke) 11.10 a.m., Manchester (Barton) 11.35 a.m., Birmingham (Castle Bromwich) 12.15, finally arriving at Croydon at 1.05 p.m. Connections from the IOM and Blackpool were made at Manchester.

The daily return flight left Croydon at 3.10 p.m. finally arriving at Renfrew at 7.30 p.m.

In 1936 with traffic increasing a request stop at Stoke-on-Trent was advertised on the Glasgow service and connecting flights from Leeds and Bradford were introduced, to the schedule at Manchester.

Air tickets were now obtainable at any Railway Station and were fully interchangeable for all or part of both or return journeys. Outward by Air, return by Air, or sea and rail were options now open to the traveller, and advance luggage arrangements were also extended to air service passengers. Holders of railway season tickets or bulk travel vouchers were able to obtain discounts on air fares.

An operating link between RAS and Coast Lines was forged with the appointment of Coast Lines Director, G. A. Read, to the Board of RAS Ltd. in 1936.

In 1937 the Manx Airway Services were

merged with those operated by the Blackpool and West Coast Air Services Ltd., a subsidiary of Olley Air Services Ltd., and the merger led to a reconstruction of a company first registered in 1935, Isle of Man Air Services Ltd., with the LMS, the IOM Steam Packet Company and Olley Air Services each taking a third share. Services from the IOM to Carlisle, Belfast and to Glasgow were operated for the LMS by this reconstructed Company.

The mid-1930s were the scene of much inter-company exchange and alongside the LMS service other privately owned companies were still operating. However, with the might of the LMS behind RAS and with the LMS able to integrate its other services, not least the railway side and hotels, the private companies could not really compete, and several companies sought to align their resources with the LMS/RAS operation.

Further reconstruction of the services in Scotland occurred in 1937. The LMS, British Airways and David MacBrayne Ltd. took equal shares to form two companies:-

1. Scottish Airways Ltd.
2. Western Isles Airways Ltd.

However, since the LMS already owned 50% of MacBrayne they had in fact a 50% stake in the two new companies.

The new Scottish Airways company took over the services and operations of Northern and Scottish Airways Ltd. and Highland Airways Ltd., in the Scottish mainland, and both companies had previously been subsidiaries of British Airways Ltd.

Western Isles Airways Ltd., took over the services of Northern and Scottish Airways Ltd. radiating from Glasgow to the Western Isles of Scotland and the Hebrides.

The traffic was progressively increasing and new aircraft were added to the fleet when required. The RAS fleet consisted of the following:-

1937	(a)	3 x DH 86	10 seat	4 engine aircraft
	(b)	8 x DH 89	10 seat	2 engine aircraft
	(c)	3 x DH 84	8 seat	2 engine aircraft

1938	3 of (a) above
	3 of (b) above
	1 of (c) above

Four of these aircraft were assigned to the LMS services:-

3 of (a) above
1 of (b) above.

Railway Air Services Ltd., and other railway controlled air companies operated more than 80% of the total United Kingdom internal mileage in 1938 and the services were a safe and speedy alternative to long rail and boat journeys.

In 1938 many eyes were aware of the events in Europe and the government were concerned with making plans for possible conflict. The Government undertook highly secret negotiations with the air companies and particularly with operators of internal air services, and concluded contracts with them to provide for immediate requisitioning of aircraft in the event of war, the contracts to remain dormant until required. These contracts included not only the aircraft but crews and other services, and they were signed in September, 1938.

A full questionnaire relating to aircraft, personnel and maintenance arrangements was conducted and the Government used the information to formulate its early plans for the requisition of private air transport resources, warning RAS that its entire operational base may have to be moved at short notice in the event of a national emergency.

In July 1939 the Superintendent of RAS was warned that all the companies civil activities would have to support a war effort and the company was told to be ready to move at 48 hours notice to Whitchurch Aerodrome, Bristol, upon receipt of a coded telegram from the Air Ministry.

In August 1939 monthly returns of the RAS fleet were called for and by the 27th August this return was called for daily, to include full movements of aircraft and personnel.

Events were moving quickly and after the scheduled air services were completed on 31st August, telegram instructions were received from the Air Ministry at 11.20 p.m. instructing the RAS fleet to move to the 'war base' at Bristol on 1st September. The travelling public were advised by BBC broadcast that the RAS flight schedules had been temporarily suspended.

Within 24 hours, the entire fleet and staff were transferred to Exeter, as an 'outbase' to Bristol, and the RAS Superintendent was placed in charge of the Exeter base, controlling a mixed fleet from Imperial Airways, British Airways and RAS.

With services in suspense, the Air Ministry halted and allowed Scottish Airways Ltd.

(50% LMS Owned) to resume civil operations on its services from Glasgow to Campbeltown and Islay, on 11th September, 1939, and three days later the Inverness - Wick - Orkney, and inter-Orkney Isles services were resumed. Isle of Man Air Services recommenced the Liverpool - Isle of Man service on 20th November, 1939, later extending this in March 1940 to Belfast. The Glasgow - Belfast was re-opened on 6th May, 1940 and on all these services one flight each way per day was allowed.

The Government's intention in requisitioning civil resources was that these should be used by Senior Services personnel in Britain, and for moving urgent supplies into France at short notice. In fact a great many flights by RAS aircraft into France took place.

The Air Ministry suggested that railway associated air companies should group to form the 'Railway Associated Group' of airlines under the title Associated Airways Joint Committee, and for non-railway connected companies to form another group, so that negotiations could be conducted by the two groups with the Air Ministry, rather than with individual companies.

Five Air Companies in which the LMS were interested:-

Isle of Man Air Services Ltd.
Railway Air Services Ltd.
Scottish Airways Ltd.
Western Isles Airways Ltd.
West Coast Air Services Ltd.

together with three others:-

Air Commerce Ltd.
Great Western and Southern Air Lines Ltd.
Olley Air Services Ltd.

all railway associated companies, grouped to form the Railway Associated Group.

A change of policy for the air companies was made and they were now required to operate certain public air services on specified routes considered to be of national importance, and this was on a day to day basis. Just as suddenly as air services had recommenced, so they were again suspended on 17th May, 1940 and aircraft used for war requirements. A short resumption followed but again suspension was ordered and the aircraft were placed on standby for the Dunkirk operation and elsewhere. Further resumption on 3rd June, suspension again on 15th June followed and aircraft were ordered to France. Four of the seven aircraft had to be abandoned at Bordeaux, but services were generally

resumed again on 27th June, 1940, with alterations to services as the war requirement determined from time to time.

Ten of the twelve air routes designated to be of 'National importance' were on the LMS network of associated companies and the LMS was thus fortunate in preserving much, and to be congratulated on developing the all important routes.

The routes were:-

1. Shoreham - Guernsey - Jersey
- + 2. Liverpool - Belfast - Renfrew
- + 3. Liverpool - Dublin
- + 4. Inverness - Kirkwall - Sumburgh
- + 5. Aberdeen - Stromness - Kirkwall
- + 6. Renfrew - Campbeltown - Islay
- + 7. Renfrew - Stornoway
- + 8. Renfrew - Tiree - Barra - Benbecula - North Uist
- + 9. Liverpool - Isle of Man - Belfast
- +10. Wick - Kirkwall - Stromness - Thurso
- +11. Inter-Orkney Islands
12. Penzance - Scillies

+ LMS Assc. Routes.

In 1941 the Liverpool - Belfast and Glasgow - Belfast services carried more than 10,000 passengers on 200,000 route miles, and Air Mails were also carried.

In late 1942 the LMS, and GWR & SR acquired the major interest in British and Foreign Aviation Ltd., and also in its subsidiary, Olley Air Services Ltd.

The Isle of Man Steam Packet Company obtained further shares to secure a 50% stake in Isle of Man Air Services, taking half the shares formerly owned by Olley, and the LMS owning the other 50%. The Steam Packet Company and the LMS each appointed 3 Directors to the Board of Directors of ICMAS, with the LMS continuing to provide the Chairman, Mr. W. P. Bradbury, O.B.E.

By 1944 the Liverpool and Glasgow services into and out of Belfast were twice daily with a further flight laid on to meet summer requirements. Scheduled services were resumed in the London area, when on 13th November, 1944 the Croydon - Liverpool flight recommenced using a 10 seater DH 864 engined aircraft, which had hitherto been a mainstay of the airwork during the war.

With the resumption of this service the Chairman of RAS Ltd., Sir Harold Hartley - a Vice President of the LMSR, presided at an

inaugural luncheon at the Adelphi Hotel, Liverpool, and referred to a programme by the Railway owned air companies to operate a comprehensive network of air services in the U.K. and on to the Continent, with a high degree of co-ordination between Rail, Road, Sea and Air transport, in the post-war era.

The Railways, and principally the LMS, therefore took a great part in integrating all modes of transport to provide the best possible services for the public in the post-war period.

Throughout the RAS operations only one passenger was killed - by German action - and during the war period 250,000 passengers, 6 m.lb. of mail and cargo were carried and 6m. miles were flown.

Early in 1945 the Government reviewed the plans of RAS to provide integrated transport services, and in a White Paper on the future of Air Transport then to be published, the various plans and proposals were considered, including nationalisation.

Further new aircraft were acquired, chiefly DH 89A Dragon Rapides, to operate a new direct Prestwick - Croydon service, and the need for larger 12 seat and 25 seat British built aircraft identified with the extended services.

Although RAS operated the services, now with their own personnel, the railway companies continued to undertake financial responsibility for the services in their areas of the country.

By 1947 the RAS activities became a part of the newly formed British European Airways and railway responsibility ceased.

A word about liveries to close. The 1933 GWR service - the first to start - was operated by an aircraft in the GWR livery, but it is believed LMS aircraft were silver with red markings pre-war, camouflage until April, 1945, and a new Rapide was delivered in the 'new' livery of aluminium dope, with red lettering and outlined in green and red, with white and blue identification marks, in April, 1945, for use on the new direct Prestwick - Croydon service - the Royal Scot run of the air !

Specimen registrations for modellers:-

Pre-war:	G.ACXY Mercury	- D.H.86B 10 seat 4 engined
	G.AEFH Neptune	- - ditto -
	G.AEWR Venus	- - ditto -
	G.AEFF Juno	- D.H.89A 7 seat 2 engined
Wartime:	G.AFOI (Camouflage livery)	
1945:	G.AGLE	- D.H.89A 5 seat (Camouflaged)
	G.AFFF	- D.H.89A 5 seat 'New livery'

LMS Canal Operations

A lesser known activity of the LMS was the ownership of 13 lengths of canal totalling 542 miles.

Canal traffic was a relatively cheap form of freight transport which had played an important role in the industrial development of this country with origins in the pre-railway era. Only two stretches of canal are shown as being unused, the Coalport and Ulverston Canals, and both were only short stretches.

LMS Canals were:-

England and Wales	Length	1923	1938
	Miles Chains	Tonnage Conveyed	Tonnage Conveyed
Ashby	29.75	20,416	16,920
Coalport	1.17	NIL	NIL
Crawford	16.79	20,859	16,215
Huddersfield	23.49	46,208	16,650
Lancaster *	73.47	61,308	30,385
Manchester, Bolton and Bury	15.76	262,998	86,835
Shropshire Union (Bought 1923)	194.3	324,642	214,654
St. Helens	16.33	123,956	94,016
Trent & Mersey	117.28	476,385	285,870
Ulverston	1.28	NIL	NIL
Kensington	.11	202,106	168,519
LMS one-third ownership			
(* 60 miles worked by LMS)	490.46	1,538,878	930,064
Scotland			
Forth & Clyde	38.74	140,234	109,687
Monkland - closed 1934	13.20	11,274	NIL
	52.14	151,508	109,687
TOTAL	542.60	1,690,386	1,039,751
Total Canal Tonnage for Great Britain		14,594,377	12,951,746

Of the 12,951,746 tons, 1,112,076 originated on railway owned canals. LMS thus had very much the lions share of railway owned canal traffic. However, in spite of these tonnages, the canal operation was a loss maker, and for the first year of LMS ownership the Receipts and Expenditure were as follows:-

	Income	1923	Expenditure	
Tolls		84,785	Superintendence	5,408
Wharfage & Crannage	1,614		Wages, Lock- keepers & Toll Clerks	33,367
Rents Rec'd	43,165		Canal Maintenance	134,133
Miscellaneous	8,765		Water Supply	6,462
Total Recpts.	138,329		Rates	24,188
Loss for year	82,984		Miscellaneous	17,755
		221,313		221,313

By 1938 gross receipts were £120,926, reduced toll being offset by higher rents and miscellaneous income of 1923. Expenditure had dropped to £49,790 so that the loss for the year was £28,864. Quite an improvement, despite a very substantial drop in tonnages carried.

The canal operation was provided for both the LMS owned barges and other large operators of these craft. The LMS had a fleet of narrow boats and they were lettered LMS and No. on a light coloured panel, on either side of the bows.

Lock-keepers, toll clerks and maintenance staff totalled 1046 in 1923 and these had been slimmed down to 815 by 1931. Generally canal traffic was declining throughout the 1920s and in 1929 an Act was passed enabling rate relief of 75% of the rateable value of premises used wholly for industrial or transport purposes to be allowed. Canals were included and the Act provided for the rate relief granted under the Act on canal properties to be passed onto the traders in the form of a Canal Rebate. All merchandise carried was allowed a 10% tolls rebate. Rate relief helped the LMS in 1938 to the tune of £20,000.

The maintenance costs were always high and were the principal factor for the losses on operations occurring. Staff costs were reduced to 16,700 by 1930, less than half the 1923 figure, and with only a 20% reduction in persons employed, wages received by canal employees were obviously low.

Coal, timber, clay, various ores, iron and steel were heavy commodities to be seen on canals.

Throughout the war years the Canals were used much more heavily than immediately prior to the hostilities and after the war, upon Nationalisation the Waterways passed into public ownership.

During researches, no information has been

found to indicate the LMS actually owned canal barges, other than the following reference in LMS Organisational Notes for 1947:-

"The Chief Marine Superintendent is also responsible for the maintenance of the canal barges on the Birmingham Canal Navigation System and electric tugs on the Trent and Mersey Canal."

The LMS allowed pleasure craft to use the canals and a scale of rates were applied to operators of these boats.

If anyone has any further information on LMS owned narrow boats, livery and photographs the writer of these notes would be interested in hearing from them.

LMS Barrows and Trolleys

The LMS inherited a vast assortment of barrows and trolleys from the constituents and the designs were perpetuated in the first few years of the LMS.

Minor variations were soon in evidence but these really only replaced the pre-group cast or imprinted lettering with LMSR, particularly on wheel castings.

Virtually all the constituents had used wooden frames for flat platform trolleys but in the early 1930s a new design of trolley was developed. This was of steel welded construction and with wood used for the platform. It followed closely on the lines of one produced by Tubewrights Ltd. of Liverpool and supplied to the LMS.

Trolleys for special uses were built in small numbers with modifications from a basic design of trolley. Amongst these were platforms fitted with rollers for use with heavy items and milk churns.

With the LMS having shipping interests several designs were built specifically for use on ships or to facilitate transshipment of goods. Sling trolleys were used and once loaded were slung by crane onto the ship and remained so until reaching the warehouse at the end of the journey.

Experiments were carried out in 1939 with a large low trolley, and this was fitted with a wide conveyor belt for use at berths and used at Heysham.

Sack trucks differed little in design and construction and there were many different sizes and specialised types. Wheels were the only readily discernible changes from those of the constituents. Basic construction has always been in wood, but iron staves were fitted for heavy work, particularly in sheds and works.

Barrows of the LMS were built to a specification of the LNWR and this became the standard LMS built large platform barrow. Small numbers of the former Midland Railway curved leg design were built but it was a heavier barrow altogether than the former LNWR one. The LNWR design and LMS repeat differed only in wheel lettering and end ironwork - the LMS end was curved at the top instead of the squared end, and the bars were rivetted to the outer rim rather than cast or welded.

With ordinary usage the barrows and trolleys lasted for many years and just as the LMS had over substantial numbers and types, so the LMS passed on equally "Allsorts Assortment" onto B.R. in 1948.

Special trolleys included the very elegant Midland buffet bars, the large-wheeled, but small Rug and Pillow trolleys, and the larger Rug and Pillow trolleys with small wheels (!) which were a feature of the LNWR works at Wolverton.

A special 2 wheel pump tank was to be seen at principal stations, used for filling toilet water tanks in coaching stock.

By 1923 brakes were fitted to the majority of trolleys and some barrows used on platforms, certainly as a result of the Wellingborough accident.

Automation came to trolleys with the introduction of a four-wheel electric truck in the late 1930's. The 1 ton Harbilt battery chassis was fitted with a steel framed, wooden flat platform body, and pneumatic tyres, and it was handle-operated.

Many of the trolleys were fitted with welded rubber tyred wheels, but possibly only as replacements on visits to works or when the originals were worn out.

Livery was black with white lettering, although grey was also used, particularly on sack trucks.

Allocation of these items to stations was (from official records):-

Stations at which No of staff handling traffic is	No. of 2 wheel barrows Small, Med. & Large
1 - 5 men	One truck in excess of the number of men.
5 - 9 men	Two trucks in excess of the number of men.
10 men and over	1.10 trucks per maximum number of men employed on handling traffic.

At stations with a total barrow stock of 20 or over the name of the station was painted on the side-member, to facilitate identification when away for repair. Other types of barrows and trolleys were supplied according to the needs of the traffic.

These notes represent a brief resumé of the barrows and trolleys used by the LMSR.