

THE MANAGEMENT OF  
GREAT WESTERN RAILWAY INVESTMENT  
BETWEEN THE WARS

by

ANDREW MICHAEL BRIDGES

M.A.

1984

BRISTOL POLYTECHNIC

THE MANAGEMENT OF GREAT WESTERN RAILWAY INVESTMENT BETWEEN THE WARS

Being a dissertation submitted in part  
requirement for the degree of MA in  
Historical Studies of the CNAA at Bristol  
Polytechnic

Andrew Michael Bridges  
March 1984

ABSTRACT

During the 1920's and 1930's the British railway industry was in overall decline. The volume of business was falling steadily, so that the Companies' true competitors were no longer each other but the roads. This was not properly understood outside the industry, particularly by government.

Against such a background this inquiry examines the making of a number of investment decisions by one of the 'big four' companies, the Great Western Railway. It is argued here that, contrary to initial impressions, the G.W.R.'s professional managers understood the problem of the Company's overall decline. Despite the many constraints facing them, they employed both 'tactical' and 'strategical' measures in their attempts to arrest that decline, although ultimately without success.

Finally it is suggested, as a variation on Chandler's strategy-structure thesis, that 'structure' severely restricted the development of possible new strategies for this declining industry.

The management of G.W.R. investment between the wars

CONTENTS:	Introduction	1
	I Economic and political constraints	2
	II Tactical economies	15
	III Strategic decisions	
	i) Electrification	22
	ii) Mineral wagons	32
	iii) Swindon Works	48
	IV Structure and strategy	67

"... the Law of Triviality. Briefly stated, it means that the time spent on any item of the agenda will be in inverse proportion to the sum involved."

C. Northcote Parkinson, Parkinson's Law (1957)

Chapter 6, 'High Finance'

## Introduction

During the inter-war years the managers of the Great Western Railway Company were faced with the task of improving and maintaining the performance of the Company during a period when the sheer quantity of railway business nationwide was in overall decline (see Table 1). It had been particularly hoped that the 1923 'Grouping' would improve the efficiency of the railways, but this hope proved unfounded.

It is against this background that this inquiry attempts to assess the making of some of the key investment decisions by the G.W.R. during this period. The actual thinking behind certain decisions can on occasions only be inferred or reconstructed, but it is as important also to examine these decision-making processes in the light of historical (ie economic and political) and structural constraints.

The investment decisions examined in this inquiry are classified as either 'tactical' or 'strategic' decisions. A tactical decision involves a re-allocation of energy or resources within the existing structure; a strategic decision requires a major structural alteration, either of the organisation of the Company, or of the industry itself.

## Economic and political constraints - British railways in decline

- (1) The quality of management of the four grouped railway companies remains a subject of controversy. D H Aldcroft argues that British railway managers were unimaginative in their investment policies (both new and renewal), in pricing and in pressing technical innovations. Others such as M R Bonavia argue that they did the best they could under circumstances where railway decline was inevitable.

- Aldcroft itemises the reasons why net receipts continued to fall steadily during the inter-war years despite the high hopes expressed between 1919 and 1922. He demonstrates that passenger traffic failed to increase significantly at a time of steady increase in land journeys made by the population as a whole, while freight traffic actually went into decline. In 1937, the best year in the 1930's, the quantum of merchandise carried was only 74 per cent of the 1913 level, although in terms of ton-miles the decline would probably have been a lesser one due to the longer mile-ages undertaken. Aldcroft argues that, although road competition affected the railways' carriage of lighter goods (classes 7-21 on the new Rates system), the railways still had a virtual monopoly on the heavier traffic of coal and minerals. Unfortunately it was these industries which were themselves in rapid decline in the 1920's. In 1932 the national ton-mileage of coal transported by rail was 79 per cent of the 1924 figure. Meanwhile in the newer, light industries blossoming in the midlands and the south the railways found it difficult to compete with the much more

---

1. D.H. Aldcroft, British Railways in Transition (1968)

2. M.R. Bonavia, Railway Policy Between the Wars, (Manchester, 1981)

3. W. Smith, An Economic Geography of Great Britain, (2nd edn.1953), p593

flexible operation offered by the new road contractors whose costs were actually falling. Further details of this steady decline are shown in Table 1.

TABLE 1  
Summary of railway statistics, 1920-38

Goods, mineral and livestock  
traffic (tonnage, millions  
excluding free-hauled)

Year	Net Revenue (£ million)	General mer- chandise	Coal Class	Other minerals (classes 1-6)	Passengers (excluding season-ticket holders) (millions)
1913	-	67.8	225.6	71.1	1199.3
1920	-	68.7	181.2	68.1	1579.0
1921	-	50.5	128.3	39.1	1229.4
1922	-	52.8	200.1	48.7	1194.7
1923	-	59.0	222.2	62.1	1235.6
1924	-	60.9	209.2	65.4	1236.2
1925	-	59.7	193.7	62.5	1232.6
1926	-	53.4	114.1	45.1	1069.0
1927	-	60.2	195.8	65.8	1174.7
1928	-	57.2	187.3	61.6	1195.9
1929	45.8	57.6	207.1	64.9	869.9
1930	38.5	53.2	193.3	57.8	844.3
1931	34.2	47.6	173.7	47.1	795.2
1932	27.2	42.5	167.2	39.9	777.3
1933	29.6	42.5	165.5	43.1	798.9
1934	32.3	45.2	174.0	50.8	829.7
1935	33.7	45.3	174.8	50.7	856.2
1936	36.5	48.3	177.5	54.9	875.7
1937	38.7	50.3	188.1	58.7	906.1
1938	29.8	44.3	172.8	47.4	848.9

Source: Railway Returns

- (1) 1913 figures are for Great Britain; others are for the United Kingdom.
- (2) From 1920, tonnage is counted once only where traffic passed over more than one company's system.

Reproduced from: T.C. Barker & C.I. Savage, An Economic History of Transport in Britain (1974)

However, while it is not controversial to point to the railways'

decline during this period and some of the adverse external conditions they faced, it is in the analysis of the managers' response where Aldcroft and Bonavia are in disagreement. Aldcroft acknowledges that in the area of pricing there were legal restrictions on the railways' standard rates but he thinks that these have been exaggerated by the managers' apologists. He criticises the managers for their inflexibility because of their acceptance of uneconomic standard rates, especially over long distances where road transport was weak. He then turns the argument round and criticises them for their excessive use of exceptional rates - some 70 per cent of gross freight receipts in 1935. His argument is that when rate reductions were made they were made 'across the board,' failing to capitalise on routes where demand was inelastic and failing to surrender short cross-country routes which were never going to be economic anyway. This applied equally to freight and passenger rates, and Aldcroft accounts for this by the managers' lack of knowledge of, or even interest in, the accurate costing of different operations. The 1921 Act helped to perpetuate the system of pricing by the value of goods transported rather than the actual cost of transporting them. Nevertheless Aldcroft clearly feels that it was possible in practice for the managers to overhaul the whole pricing system and that it was their failure that this was not done.

Bonavia's view is that the managers' freedom of action was much more restricted than Aldcroft is prepared to concede. Because of the element of public service and therefore of monopoly with which the railway companies had to live, the very public issues of services and charges had been sensitive political issues from the late nineteenth century onwards. Full nationalisation had been a serious possibility in 1920 when the re-organisation of the railways was being planned, so in the inter-war years railway managers did not wish to disturb any political hornets' nests.

Drastic pruning of uneconomic routes caused enough controversy in the 1950's and 1960's, and it would be unlikely that such a nettle would have been grasped with enthusiasm in the 1920's and 1930's. Therefore with, for example, the fixing of rates the line of least resistance was to make piecemeal changes in exceptional rates rather than make a very public application to change the standard rates - they avoided doing this until 1937.

In terms of technical progress, Aldcroft is prepared to concede that various improvements were made in operational efficiency during the inter-war years including faster express services, greater daily mileage per locomotive (reducing the number needing to be maintained), and a major reduction in total labour force from 735,870 in 1921 to 588,517 in 1939. The total man-hours per train-mile dropped from (4) 4.43 in 1913 to 3.02 in 1936. As will be seen later on, the G.W.R. played its part in these aspects of improved national railway efficiency. However, in the loading and use of mineral wagons, a key issue for the G.W.R., Aldcroft argues that there was room for a great deal more improvement than that which actually took place. He points out that the case for the use of twenty-ton wagons, and other measures for rationalising freight traffic, was made (in 1932) by a contemporary, K.G. Fenelon, in 'Railway Economics.' Aldcroft concedes that there was opposition from rail customers used to traditional standards of service, but considers that no real effort was made by the railway managers to press on with making such innovations. The G.W.R.'s efforts in this direction will be considered further on.

---

4. Aldcroft, British Railways, pp78 - 9.



The final major conflict of interpretations follows on from these other issues, as it concerns the question of whether the railway companies actually put in sufficient overall investment during

(5) this period. Bonavia takes issue with Aldcroft's conclusion, drawn from the figures of C.H. Feinstein, that there was a net disinvestment of £125 million during this period. He argues that the 'assumed life' of many of the assets is in many cases only notional, and he shows a net investment in certain areas (e.g. locomotives) over this same period. Conceding an element of doubt in other investment areas, Bonavia returns to his case that the managers did the best they could and he argues that the charge against them of overall disinvestment is 'not proven.'

Unfortunately this reflects the weak points in Bonavia's whole case. He appears to have reacted to the wise-after-the-event analyses of Aldcroft and others by going back to interview as many 'live' sources as possible in order to recapture the contemporary viewpoint. This he has done all too well - he makes the attitude of the railway managers sound very reasonable and understandable, but almost overlooks the point being made that these very understandable attitudes still led to serious failures. While it is important to understand these contemporary attitudes, the point of an historical inquiry is nevertheless to be able to see the consequences of the decisions which arose from these attitudes, and to evaluate what the alternatives were. Equally it is not necessary to 'sit in judgement' on the persons who did not choose those alternatives, and it seems to be because Bonavia has taken Aldcroft's criticisms as a personal attack on the railway managers that he has sought in reply merely to show

---

5. C.H. Feinstein, Domestic Capital Formation in the U.K., 1920-38 (1965)

that the behaviour and decisions of the managers were understandable.

In Aldcroft's case the weakness lies in the most controversial part of his argument. He acknowledges that the railway managers faced some difficulties, but produces little evidence to support his view that the managers could have overcome these difficulties with a little more will. He makes his case more by assertion than by argument.

While Aldcroft underestimates, as will be shown later, the efforts made by (for example) the G.W.R. managers to make genuine long-term investment plans, the hard fact remains that the railway companies were in decline during this period. Table 2(a) shows that from 1928-38 none of the companies ever achieved the Standard Revenue laid down for them in the 1921 Railways Act, and that, despite a temporary recovery in 1936-7, their new revenues continued in overall decline. In this respect the performance of the G.W.R. is very much in the mainstream of the experience of the other companies. Table 2(b) shows the G.W.R.'s share of the fluctuating national railway 'cake;' the Company only once fell below the proportion (in percentage terms) of the national Standard Revenue allocated under the 1921 Act. This steady performance (in relative terms only) was maintained despite the Southern Railway's increasing share of this declining market, and also in the face of the many disturbances in the South Wales coal industry on which the G.W.R. particularly depended. All the British railways were in decline, but the G.W.R.'s performance was, at the very least, no worse than that of its contemporaries.

TABLE 2(a):

Net revenues of the four main-line railways, 1928-38

Year	Southern	GWR	LMS	LNER	Total four main-line companies
£	£	£	£	£	£
1928	6 394 412	7 057 123	16 270 821	11 277 759	41 000 015
1929	6 547 966	8 198 644	17 175 839	13 061 250	44 983 699
1930	6 133 927	6 987 146	13 426 291	11 168 749	37 716 113
1931	5 607 873	5 682 396	12 655 656	9 424 610	33 370 535
1932	4 894 109	4 459 403	9 904 823	7 166 857	26 425 192
1933	5 539 797	4 828 561	10 712 684	7 723 120	28 804 162
1934	5 800 335	5 510 999	11 921 936	8 348 147	31 581 417 *
1935	6 072 297	5 450 559	13 027 575	8 371 373	32 921 804
1936	6 226 160	6 314 829	14 048 126	9 141 396	35 730 561
1937	6 552 124	6 886 505	14 356 276	10 107 442	37 902 347
1938	5 941 904	5 043 753	11 345 520	6 653 167	28 984 344
Standard Revenue laid down in Railways Act, 1921:					
	7 100 000	8 500 000	20 060 000	15 200 000	50 860 000 *
Source: Railway Returns, 1928-38.					
Reproduced from: T.C. Barker & C.I. Savage, <u>An Economic History of Transport in Britain</u> (1974) with corrected totals marked *.					

TABLE 2(b):

Net revenues of the four main-line railways, 1928-38, expressed as percentage of national net revenue.

	GWR	SR	LMS	LNER
Standard revenue	16.71	13.96	39.44	29.89
1928	17.21	15.60	39.68	27.51
1929	18.23	14.56	38.18	29.04
1930	18.53	16.26	35.60	29.61
1931	17.03	16.80	37.92	28.24
1932	16.88	18.52	37.48	27.12
1933	16.76	19.23	37.19	26.81
1934	17.45	18.37	37.75	26.43
1935	16.56	18.44	39.57	25.43
1936	17.67	17.43	39.32	25.58
1937	18.17	17.29	37.88	26.67
1938	17.40	20.50	39.14	22.95

Source: Calculated from Table 2(a).

For my part I do not find it especially useful to try to 'sit in judgement' and try to decide if the railway managers were personally blameworthy for the policies that were or were not taken. A less emotive analysis, that by P.S. Bagwell, makes a more useful presentation of the issues already discussed, echoing the purist economist's view given by Aldcroft that better management practices could have improved the condition of the inter-war railways, but without underestimating the constraints of the time within which the managers were having to operate.

The overwhelming external problem facing the railways as a whole was the growth of road transport. The costs of road haulage continued to fall during the inter-war period as the quality of vehicles available and overall service offered continued to improve. Road hauliers were not 'Common carriers' and thus had no obligation to take on goods at an unprofitable rate. Instead they had the privilege of being able to price each job separately, without having to publish those prices, which meant that because of their much lower overheads they could fix each price in some relation to the actual cost of the job.

The freedom of action for the railways to react competitively was severely restricted. Historically, as the railway companies had grown in the nineteenth-century, government regulation had grown to guard against Parliament's fear of the abuse of the privilege of monopoly. In response the railway companies had developed something of a 'service ethic', promoting their image as servants of the public rather than as aggressive profit-takers - a sound investment but not a spectacular one.

---

6. P.S. Bagwell, The Transport Revolution from 1770 (1974)

This public service image was particularly heightened by the reality of government control during the First World War. That experience confirmed the opinion being formed in government (following the 1911 Report of the Departmental Committee) that the railways needed regulated co-ordination to improve efficiency. It was, for example, discovered that the running of empty wagons was reduced from 60 per cent to 20 per cent under wartime regulation. But when new co-ordination of railway services was introduced after the war, new regulation was also imposed at the same time.

The 1921 Railway Act had six parts, of which the first part brought the most visible change - the 'Grouping' into four main-line companies - which was intended to bring improved co-ordination and efficiency to the railways under peacetime conditions. This was at least an attempt to begin to bring a twentieth-century solution - administrative co-ordination - to the problem of adapting British railways to twentieth-century conditions. However, much of the rest of the Act is about regulation - still responding to the nineteenth-century fear of monopoly at a time when the railways were entering a period of twentieth-century competition. The railway companies' competitors were no longer each other, but the innovating outsiders, the road hauliers. In effect, the government had harnessed the railway companies so that they could function more as a team, but then hobbled them. Like the proverbial Irish navy, the companies were faced with the prospect of repeatedly going back to ask for a longer piece of string.

Since the key controversial part of Aldcroft's argument is that the railway managers did not do enough to break themselves free of the restrictions imposed on them by government, some evidence of the G.W.R.'s behaviour in this respect can now be considered. Evidence merely of the awareness by

the managers of the importance of the issue is evident on several levels: from the late 1920's Viscount Churchill had become accustomed to commenting in his statement to the shareholders at the A.G.M. that the railways were facing unfair competition from the roads, and his 1932 address exemplifies this. It summarises admirably the case being made by all the railway companies at this time, and culminated in 1938 with a Press and poster campaign demanding 'A Square Deal Now.' Their lack of success at this late stage was in part due to the distractions of the international crisis, but also in part due to an unsympathetic body of public opinion, as exemplified by the Daily Express. Its editorial reveals that newspaper's complete lack of awareness of, or interest in, the twentieth-century reality of road competition:

"If we conferred that right (the right to fix charges privately) upon the railways, there would be two rates, one for the rich and another for the poor."

The 'Square Deal' campaign was arguably conducted late, and its effect on public opinion was rather limited (presumably the key issue of freight charges did not capture the public imagination), but the railway companies had not been passive or complacent in accepting their lot. The G.W.R. was in the forefront of the railways' fight to reform the commercial restrictions imposed upon them.

Further evidence can be found of the G.W.R. interest in the issues both of regulating the railways and co-ordinating them.

- 
7. O.S. Nock, History of the Great Western Railway Vol.III (1967) p148ff
  8. Ibid. p151

In amongst assorted papers of the Chief Mechanical Engineer's Department is a series of articles published in The Times from 12th-18th May 1932 entitled 'The Plight of the Railways.' Interestingly this is within three months of the A.G.M. address of Viscount Churchill referred to earlier. The articles emphasise:

1. That the scale of rail losses are new compared with 1929
2. Government interference in Rates and Wages
3. Road competition
4. That railways need to be more efficient - faster, and eliminating unnecessary competition etc.
5. Road haulage is cheaper to operate, as costs are completely different.

The final conclusion reads:

"The problem therefore is to invent a plan of co-ordinating rail and road transport in such a way as to avoid subsidising the road at the expense of the railway, without unduly penalising the legitimate development of the newer form of transport."

(9) These articles highlight, in a curiously oblique fashion, some of the reasons why the railway problem was never tackled effectively between the wars. It has already been pointed out that the 1921 Conservative government was not prepared to impose co-ordination without imposing regulation as well. However, on their part, when the companies campaigned for a relaxation of the restrictions imposed upon them, there seems to have been no recognition that they should give up any of their existing independence. They gave few signs that they would accept closer co-ordination with each

---

9. See Viscount Churchill's address for example.

other during this period, let alone with road transport as suggested by The Times. It was not just the government that was blinkered by certain nineteenth-century attitudes.

Nevertheless it was the continued inconsistency of government which did most to prevent the railways from securing a firmer footing - as described by P.S. Bagwell. What The Times article obliquely highlights is that in the 1920's government could avoid major interventions on the grounds that the railways were then gradually building up their business successfully - in the early 1930's when business collapsed government could not now afford to intervene on the scale required. This is perhaps illustrated by the railway companies' difficulty in finding a favourable time to initiate the 'Square Deal' campaign during the period 1932-8. This also reflects the decline of the railway 'lobby' in Parliament.

While government policy was inconsistent and comparatively unresponsive to railway influence during this period, this is not to say that it was inactive (the 1929 Development Act will be discussed later). This hotch-potch of government activity provides the political constraints within which the G.W.R. and other companies had to manage their affairs.

Section 29 of the 1921 Railway Act was the section which established standard rates. It retained the principle of charging by classification of the goods themselves (rather than by the cost of conveying them), and also strictly by distance even though short cross-country journeys were often much more expensive to operate than longer main-line ones. The railways were thus forced as common carriers to convey uneconomic goods on uneconomic routes, and to cross-subsidise accordingly from their more profitable routes. Twenty-one new classes of merchandise were established,



and standard charges were calculated for each to take effect on 1st January 1928 with a view to each main-line company earning a 'standard revenue' each year. (These standard revenues were never achieved, as illustrated earlier). The Railway Rates Tribunal which was set up to administer these rates anticipated that exceptional rates would be unusual - however by 1938 80 per cent of rates actually charged were exceptional. These exceptional rates were almost invariably lower (not higher as anticipated) and their proliferation was directly due to road competition. That the companies did not formally seek a change in the standard rates until 1937 is a reflection of their view of a politically unfavourable climate throughout this period - a view ( and the reasons for it) illustrated earlier.

The government's continued specific interest in the railways was shown when they abolished the passenger duty in 1929 (which was at least a practical help). The 1930 Royal Commission on Transport made an attempt to evaluate the economies achieved by the 'grouped' railway companies, and the economies still to be achieved, while the 1931 Weir Committee investigated and recommended the electrification of much of the railway system. However the practical assistance in implementing such recommendations was not forthcoming. Therefore when the G.W.R. had to make decisions on electrification, and on larger capacity wagons (as recommended by the 1930 Royal Commission), they had to make these decisions in the absence of a consistent government policy on how to bring about a better-co-ordinated, more efficient British railway system.

## Tactical economies

The G.W.R. management were certainly aware of their gradual grinding decline. Unlike earlier, they now compiled a substantial amount of information about the company's performance year by year - but they found themselves ill-equipped to solve the underlying problems. They could make tactical economies - improving the efficiency of existing operations - but they found it much harder to effect fundamental changes in strategy. Like the crew of the locomotive out of control on a gradient too steep, they could slow their decline by skilful operation and fine tuning of the controls; but they knew that to solve the problem the railway itself needs to be rebuilt.

Just how much they attempted to make fine tunings to these controls is (1) illustrated as a recurring theme in the Company records. In the minutes of the Chief Officers' Conference May 1925 the Chief Accountant draws attention to the Company's unsatisfactory financial results and advises that expenditure must be cut down on everything except renewals. On 1st September 1932 a memorandum from G.B. Collett to F.C. Hall is still saying that all small works must cease or be postponed or "If completed, (2) will it result in a saving of working expenses." But whereas they did not always find it that easy to control expenditure on "small works" in practice, reduction in employees or hours worked was a much more tangible (3) move. The minute of the Board of Directors meeting of 29th October 1926, recording that, with some exceptions, the men at Swindon were going from a four-day to a three-day week, is almost a casual one.

- 
1. 'Mins of Chief Officers' Conference,' 4 May 1925, RAIL 250/144, P.R.O.
  2. 'Memo,' 1 September 1932, RAIL 253/264, P.R.O.
  3. 'Mins of G.W.R. Board,' 29 October 1926, RAIL 250/54, P.R.O.

(4) However, even in their desire to make these economies there seems to be little understanding of how to measure or evaluate them. This is evident from the very beginning of our period in the Report of the Sub-committee of Economies Consequent upon Amalgamation of 1923. The introduction comments that Sir Eric Geddes had thought that £25 million per annum would be a "modest estimate" of the savings which would be made by amalgamation, but that no details had been offered. This estimate had been made at the Bill stage, but a Government committee of 1918 had listed thirteen possible methods or areas of saving:

1. Concentration of control of operations.
2. Despatch of traffic by shortest and best route.
3. Better loading of trains.
4. Common and better use of rolling stock.
5. Reduction of shunting mileage etc.
6. Economic terminal handling of goods by mechanical appliances.
7. Economies from eliminating wasteful competition and advertising etc.
8. Reduction in Clearing House operations etc.
9. Wholesale purchase of stores.
10. Reduction in personnel.
11. Standardisation of equipment.
12. Concentration of manufacturing and repairing operations.
13. Concentration of auxiliary services.

But our Sub-committee immediately eliminated over three-quarters of these suggested areas of investigation with the words:

"Economies under some of these heads e.g. due to the use of mechanical appliances would have accrued to the G.W.R. in the normal course of development, irrespective of the grouping of railways. Whilst under other heads such economies as might result from grouping would be difficult to

---

4. 'Report...' 1923, RAIL 258/453, P.R.O.

measure and would operate very gradually over a number of years."

The Sub-committee instead chose to concentrate on the areas they would understand best:

1. Reduction in personnel.
2. Wholesale purchase of stores.
3. Elimination of competitive train and cartage working.

This disappointing conclusion illustrates the understandable difficulties which the G.W.R. managers had both in investigating and measuring changes in the very structure of operations. Yet they did achieve some success with their tactical economies, and on certain occasions succeeded in measuring them. The Chief Mechanical Engineer's Department had a statistical section - of which more later - and there is evidence of increasingly thorough efforts to save day-by-day or month-by-month costs through the monitoring work of this section. One senses in the C.M.E.'s annual reports some pride in their ability to calculate and monitor continuously the repair costs for each individual engine, and thereby the average running costs of each class of engine. They also particularly monitored the labour costs and output per man-hour at Swindon, and there is evidence that these areas of monitoring encouraged the Company to make steady but piecemeal cost-cutting measures.

There are (albeit scanty) references in the C.M.E.'s annual reports of 1925 and 1928 that the performance of locomotives acquired through the 1923 amalgamation had been assessed so that the department knew which to condemn and which to rebuild or adapt for continued use. A table is

- 
5. 'Report by General Manager on statistics compiled by Chief Mechanical Engineer's Department at Swindon,' 1927, RAIL 253/390, P.R.O.
  6. 'Annual Report of the Chief Mechanical Engineer,' 1925 and 1928, RAIL 258/304, P.R.O.

inserted in the 1925 report to show the substantial improvements in coal consumption effected by these 'absorbed' locomotives after certain 'improvements.' This is reproduced here as Table 3.

Table 3

<u>Engine Class</u>	<u>Average Coal Consumption per Mile in lbs</u>		
	<u>Before</u>	<u>After</u>	<u>Decrease</u>
Taff Vale 299	64.9	49.8	15.1
Taff Vale 315	61.2	51.4	9.8
Taff Vale 441	61.8	45.4	16.4
Barry 198	53.0	45.9	7.1
Barry 196	54.3	50.1	4.2
Barry 725	44.5	42.6	1.9
Cambrian 855	64.6	51.5	13.1
M & S.W. 1005	53.7	42.9	10.8
M & S.W. 1007	45.4	33.5	11.9

Source: P.R.O. RAIL 258/304 Annual Report of the C.M.E. 1925, p.2

Such small tactical economies could be combined into quite substantial cumulative savings for the Company as a whole. Furthermore the C.M.E.'s department began to find that with their increased ability to measure individual locomotive repair and maintenance costs they also developed the ability to make more efficient use of the stock of their locomotives as a whole. The 1937 report presents a summary table - reproduced here as Table 4 - to show that in the ten years 1927-37 the total mileage covered by G.W.R. engines increased, the stock of engines decreased, and the average mileage per engine increased significantly. Allowing for a considerable falling-off of business 1930-5, it appears from the table that the average stock of engines each year decreased steadily until 1936, but the recovery of business in 1936-7 was accommodated almost entirely by increased efficiency of engine working. The

increase in engine stock for 1937 is marginal compared with the increased mileage, and this is reflected in the continued significant increase in average mileage per engine for that year.

Table 4

Total mileage by G.W.R. engines compared with stock of engines  
(including Rail Cars but excluding Electric Stock)

1927 to 1937

<u>Year</u>	<u>Stock of Engines</u> <u>(Average for year)</u>	<u>Total mileage</u>	<u>Average mileage</u> <u>per engines</u>
1927	4088	95,953,179	23,472
1928	4019	95,060,257	23,653
1929	3945	97,396,313	24,689
1930	3914	96,273,189	24,597
1931	3895	92,012,127	23,623
1932	3835	89,414,321	23,315
1933	3779	89,369,677	23,649
1934	3734	92,288,204	24,716
1935	3620	94,459,456	26,094
1936	3604	97,904,011	27,165
1937	3621	100,421,983	27,718
Includes Steam Rail Cars		1927-1935	
Includes Diesel Rail Cars		1935-1937	
Decreased Stock		1927-1937 =	467 or 11.4%
Increased mileage		1927-1937 =	4,468,804 or 4.7%
Increased annual mileage per engine		1927-1937 =	4,246 or 18.1%

Source: P.R.O.RAIL 258/304 Annual Report of the C.M.E. 1937, p4.

If this table in the 1937 report is the most thorough example of improved efficiencies given in all the C.M.E.'s annual reports, there are nevertheless several other examples which show their awareness of the issue. A cryptic sub-section in the 1925 report states merely:

(7)

ELECTRIC EQUIPMENT OF TRAINS

The work of maintaining the electrical equipment of trains, which was

---

7. Ibid, 1925, p3.

carried out at Old Oak Common, has been transferred to Swindon, where it can be more economically performed in conjunction with the general carriage work."

(8) No attempt was made to measure the economy effected on this occasion, and similarly in the 1926 report the new gasholder at Swindon Works is merely described as having "effected very great economy in the saving of gas over the weekends ..."

(9) However, to balance the picture again, there are other examples where economies were measured. In the 1925 report is an assessment that the new boilers and Coal and Ash handling plant at the Swindon boiler plant have enabled a saving to be made of £2,200 per year by using cheaper coal, and less of it. The 1927 report goes further and reports a direct saving of £10,000 per annum by installing new plant from France to implement a new system of electric drilling, tapping and tube expanding in the same Boiler Shop.

(10) These examples illustrate the efforts made by the C.M.E.'s Department to make economies on what I have called a tactical level - readjustments within an existing structure. Also evident is that there were sometimes real efforts made to measure these economies. However, on the question of improved efficiency at a strategic level these reports are perhaps by definition out of their depth. Strategic changes - involving the restructuring of the Company's operations as a whole - can only be made at head office level involving considerations outside the scope of any single department of the company. Nevertheless some of these important questions

---

8. Ibid, 1926, p6.

9. Ibid, 1925, p4.

10. Ibid, 1927, p4.

are raised, or begged, on various occasions in these reports. In particular they include the possible electrification of the railway system, the reform of the use of mineral wagons, and the investment policy for the Swindon Works as a whole. These topics provide three case studies through which the G.W.R.'s ability to plan and execute strategic decisions can be considered.



Strategic decisions:i) Electrification - the non-event

The question of possible electrification of all or part of the G.W.R. provides a useful illustration of three main themes of this inquiry. First is the sheer practical difficulty of achieving a major strategic change in operations in the case of a large railway. Second is the uncertain nature of the decision-making process employed by the G.W.R. to tackle a major issue such as this. Third is the effect of the absence of a consistent government policy toward the railways. In the case of electrification, these themes combined to produce a massive non-event on the G.W.R.

The sheer practical problem in strategic terms is a very real one. Massive capital expenditure is required to build a railway, after which there is a heavy running expenditure on manpower and maintenance. Running costs can only be trimmed up to a point, but to alter them radically the very structure of the railway needs to be altered. This in turn means not only a massive injection of capital to build that new structure or technology but also a huge writing-off of the capital invested in the old structure or technology. As will be seen later, the 'knock on' effect of these considerations can be pervasive.

A further twist to this strategic predicament is that there is very little benefit in a system mixing 'old' and 'new'; the benefits of such investments are only properly realised when the transition is complete. The G.W.R. had experienced this themselves in traumatic fashion after losing the 'Battle of the gauges' in the nineteenth century when still a relatively young company. They were then saddled with a system of mixed gauges,

and discovered that it was irrelevant whether or not the broad gauge was, as they believed, technologically superior. It was not economical to run two systems on one railway, and standardisation was more important than engineering superiority; therefore over a period of years they were forced to rationalise to the standard gauge. The capital cost of changing was high, and most of the investment and technology of broad gauge was apparently wasted. One is tempted to speculate that this experience probably made G.W.R. managers a little more reluctant to spend massively on introducing a new and apparently technologically superior system unless there were some financial guarantees attached. Speculation on this subject is, however, all that is available since the evidence of the thinking behind the decisions of the Board of Directors and other committees is so scanty.

Such caution may have been understandable, and the reasons for that caution very real ones, but the minds of G.W.R. managers were not closed to the idea of strategic change, even if they did not seem clear how to go about achieving it. As early as 1914 consideration was given to electrifying the G.W.R.'s suburban lines, although the brief dismissal of the idea is disappointing. Almost as disappointing is the lack of follow-up to the 1921 decision to investigate the electrification of the 'Eastern and Western Valley lines.' The paragraph in the 1925 Annual Report of the Chief Mechanical Engineer is also frustrating:

"The question as to whether advantage can be obtained by electrifying any portion of the railway is still receiving very careful consideration. Up to the present, however, no section has been found where economy would result, but, if the schemes outlined by the Government to provide a National Supply of cheap electricity were carried out, the circumstances

---

1. 'Min. of G.W.R. Chief Officers' Conference,' 2 February 1914, RAIL 250/143, P.R.O.

2. Ibid. 21 November 1921.

- would be greatly changed, with the result that it would probably be found that some portion of the line could be electrified with advantage."
- (3)

The fact that only individual portions of the line were being considered, and only by one department of the Company, seems to show a failure at this stage to understand that this issue required consideration as a major strategic issue.

- More serious, and repeated, consideration was given to electrifying another section of the line between 1925 and 1939, and this time it took place at the very highest level - but again only the outlines of the decisions made can be traced. This episode opened with a memorandum to the Board of Directors dated 1st May 1925 requesting that Sir Philip Dawson, a known advocate of electric traction, be asked to prepare a feasibility report at the cost of 2,000 guineas plus expenses. The Board agreed. On 1st July 1927 the report was back, examining the Taunton to Penzance section, and it concluded that after spending nearly £3.5 millions over eight years the Company could expect a 7.3 per cent return on capital expenditure.
- (4)

The very topic itself and area covered by this report illustrate the first theme of this section - the practical problem of how to implement strategic change, or, in this case, where to start. The original expectation had been that the report would look at the G.W.R.'s London

- 
3. 'Annual Report of the C.M.E.' 1925, RAIL 258/304, P.R.O.
  4. 'G.W.R. Secretarial papers: Electrification of Taunton to Penzance section,' RAIL 258/274, P.R.O. These papers include the reports themselves and the extracts of minutes and memoranda that relate to them.

suburban network, which would have been in line with the contemporary successful experience of the Southern Railway. Instead Sir Philip Dawson's report states in the introduction that the Taunton to Penzance section, a relatively self-contained section, was chosen "after careful consideration with your officers" for three reasons. The first and third reasons were that expenditure on this section was going to be needed in the near future anyway. The line between Taunton and Newton Abbot was becoming very congested with traffic and a doubling of the track was already under consideration, while new steam locomotive sheds were also going to be needed soon. The second reason given was that there were many steep gradients on much of the whole section, and electric traction was thought to be particularly effective in tackling this problem. There is no further discussion of this choice in the report, and one is left to speculate why this known advocate of electric traction agreed to examine a section of railway where the overall density of traffic was low (compared with a suburban network) when it was already clear that the most economical return on capital came from electrifying networks of high traffic density. If Sir Philip was hoping to persuade the G.W.R. to become 100 per cent electric in due course he may have hoped that, once the Company had electrified this relatively unpromising section and found the advantages proved, the case for electrifying the rest of the Railway would be easy to present. Furthermore, he may have considered that at this initial stage, with the Company officers very cautious on the question of massive capital investment, it would be easier to persuade the Company to put money into a section where it was going to have to invest heavily in the near future anyway.

If this was indeed his hope, he was to be disappointed. The second theme of this section the G.W.R.'s uncertain decision-making processes, is illustrated by the reception which greeted Sir Philip's report. In the

Board minute dated 29th July 1927 the main discussion recorded is not the merits of the Report itself; instead the record is of the complaints voiced that Sir Philip's expenses were double what had been the agreed maximum. Here Parkinson's Law of Triviality is well illustrated.

There is no further mention until 11th October 1929 when a comment is recorded that Sir Philip's estimate of return on capital was "unrealistic". However the electrification issue was now to be reconsidered in the light of the money newly to be made available under the Unemployment Relief Act of 1929; in this report the London suburban network was now to be looked at. However, there is again frustratingly no further mention of the issue until 1931; possibly it was decided to await the outcome of the Weir Committee report. The same inconclusive fate befell a Special Meeting earlier in the year (6th February 1929) which met to consider the future of Paddington station. It set up a sub-committee to submit schemes for the electrification of the London to Reading Line with facilities for through working. The sub-committee was to meet jointly with "this committee" from time to time starting the following month. Since the Weir Committee was commissioned by Herbert Morrison in September 1929, this again may be the explanation for lack of evidence of further action. Hitherto government had made it clear that substantial government aid to electrify the railways would not be forthcoming, but now things looked more encouraging.

Nevertheless further indecision greeted the report when it did arrive. It reported on 1st May 1931 that electrification should be introduced nationwide, not in a piecemeal fashion. It estimated that following an investment of £261 millions in the country's railways over the next 15-20 years (plus £80 millions by the electricity companies) a 7 per cent return on capital

---

5. 'G.W.R. Secretarial papers: Electrification of London to Reading section,' RAIL 258/451, P.R.O.

6. Leslie Hannah, Electricity before Nationalisation, 1979, p163

could be expected as a "conservative estimate." One might not entirely blame the railway managers if they felt they had heard all this before; at the time of the 'grouping' they had been told by Sir Eric Geddes (as mentioned earlier) that £25 millions was a 'modest estimate' of the savings which would be effected merely by the amalgamations. Having been advised, but not concretely helped, by government on that occasion, the railway managers may perhaps be forgiven for the caution with which they greeted the arrival of the report.

A Special Meeting of Chairman and General Managers of the railway companies took place on 26th June 1931. In their opinion the Weir Committee's estimates were too speculative, and that for such a programme of massive investment they would need government help. Their request therefore was for details of what government help would be available to enable them to consider the matter further. No doubt they had noted with favour that the Weir Committee had accepted the analogy of the current public spending on roads (£60 millions per annum; £500 millions in previous ten years), and hoped that the government would now accept the implications of that analogy.

(7) In this they were to be disappointed. Herbert Morrison, the supporter of large scale electrification, had been told by his Cabinet that major Government help was out of the question, and he was obliged to pass this on to the railway chairmen in a meeting on 31st July 1931. What is perhaps more disappointing is that there is no record of any further consideration of the report by the railway managers to see what they could do from their own resources, as suggested to them by Morrison. The contemporary experience of

---

7. Ibid. p165

the Southern Railway might have merited their further consideration.

This episode illustrates the third theme of this section, the inconsistency of government policy. They initiated the Weir Committee,

(8) and indeed in 1920 and 1932 issued through the Ministry of Transport orders prescribing the permitted schemes for electrifying railways.

But while issuing advice and guidance to the railways, the government never accepted the analogy with the roads to the extent of conceding that more active intervention was required. The government's reticence tended to tip the balance against the railway companies deciding to take the plunge on major programmes of investment such as this.

For this reason it is the more remarkable that the G.W.R. was at least prepared to consider the matter further in 1938. Increasing coal prices

(9) (by 32 per cent 1934-7) gave the impetus for this review. The Board minute of 11th February 1938 merely records an agreement that the consultants Merz

(10) and McLellan were to be asked to look over Sir Philip Dawson's report again, and again the fee was to be 2,000 guineas. On 24th March 1939 the re-

commendation was back that an investment of £4.5 millions over four years would bring in a return of only 0.75 per cent per annum. Three of the

(11) tables of estimates are given by O.S. Nock, although he gives the impression that these were being done for the first time in 1938, and he also gives

the key reasons why the electrification of this section was not in practice going to be as economical as had been hoped.

---

8. Ibid. p384 and O.S. Nock, G.W.R., p153

9. O.S. Nock, G.W.R., p152-3

10. 'G.W.R. Secretarial papers: Electrification....' RAIL 258/274, P.R.O.

11. O.S. Nock, G.W.R., p154-6

As had been known all along, the density of traffic on this south-western section was not as great as on a suburban section. But, furthermore, where traffic density did produce problems on this section it only did so seasonally; this restricted the opportunity for electrification to fulfil one of its chief advantages. Merz and McLellan also put a very high cost (£2.5 millions) on the purchase of electric locomotives and multiple units, and furthermore estimated that the total number of locomotives maintained by the Company would only be reduced by a very marginal figure. Finally it was revealed that, since so great a proportion of this total section of track consisted of curved track, the spans between the structures supporting the overhead conductors would need to be shorter than normal on 61 per cent of the route. It is not surprising that, following the receipt of this new report forecasting such a marginal return on investment, no further action was resolved by the Board.

Looking back on the electrification episode, it still seems strange that so much energy was put into considering this particularly unpromising section of the line. The reasons Sir Philip Dawson gave for choosing this section in 1925 nevertheless sound persuasive - by rendering unnecessary some previously pressing short-term investment, the immediate impact of the long-term investment required was to be reduced. But once the short-term investment was no longer pressing, the prospect of plunging into massive long-term investment was immediately less attractive. By 1929 the G.W.R. had 'King' class locomotives to haul the prestige expresses up the steep gradients of south-west Devon, while the problem of pressure of traffic on the Taunton-Newton Abbot section had proved to be at worst only a seasonal problem. The reality of overall declining traffic figures, not only 1930-4, but also in 1938 after the 'indian summer' of 1936-7, would



have carried more weight than the experience of the Swedish State Railways (pointed out contemporarily by the Railway Gazette) where electrification had proved to be more beneficial than had been anticipated, including the halting of the decline in traffic. In the light of the circumstances of February 1938, so much more than in May 1925, one is tempted to think that commissioning such an inquiry on this section of the line was asking for a negative recommendation. Whatever the merits of Sir Philip's 1925 choice, the Board's 1938 decision to reconsider the same section of the line shows at the very least a lack of imagination and full understanding of the issues involved.

Given that the government's lukewarm support was of little practical value to the G.W.R., and given that the decision-making at the top level of the Company seemed to show a Parkinsonian lack of vision, the practical ramifications arising from this kind of strategic question were nonetheless considerable. As indicated earlier, a 'mixed' strategy spelled danger to a railway, since standardisation was vital for efficiency. Any disruption to any part of the railway's integrated system would have a 'knock-on' effect on other parts of the system, creating substantial problems including obsolescence and possible redundancies. For example, the G.W.R. was heavily committed to building and repairing its own locomotives, and not solely in Swindon. Following any electrification, the switch to buying the new locomotives from outside companies (certainly implied by Merz and McLellan) would have made many men redundant at the prestigious Swindon Works and elsewhere. Even if the men could have been redeployed, perhaps even building electric locomotives as the railway went all-electric, massive new costs would still have been involved, initially greater still than making them redundant. Either choice by the Company would still have resulted in the

writing-off of substantial recent investment in their railway works. Between 1913 and 1923 nearly half a million pounds was invested in building a new locomotive shop at Swindon (of which more later). In 1928 the locomotive repair works at Caerphilly were modernised, and in 1929 the Company allocated a half of the money received through the Development Act to modernising the Wolverhampton works - some £225,000 - much of which was also for repair facilities.

The separate issue raised here, of how the G.W.R. planned its investment in the Swindon Works, will be considered later. Meanwhile, on the electrification issue, it can be seen that, despite good intentions, there were some limitations to the Company's ability to think through a major strategic question. When, as on this issue, the practical problems and their repercussions were so immense, the Company with its lukewarm government support did not have the strength to get electrification off the drawing-board.

Strategic Decisions:ii) Mineral Wagons - the gallant failure?

Where the G.W.R.'s plans for electrification did not get off the drawing-board, the Company's attempts to rationalise the use of mineral wagons on its rails did make much more progress in practice. The problem was a major one; for two interrelated reasons the use of mineral wagons on the G.W.R. was grossly inefficient. First, the rolling stock consisted almost entirely of wagons of a twelve-ton capacity or less, in sharp contrast to the much higher capacity wagons used in the U.S.A. Second, the vast majority of these wagons were privately owned by a large number of different collieries and other concerns. These factors continued to bring about a grossly excessive movement of traffic, including the extensive running of empty wagons, by the G.W.R. in proportion to the total quantity of coal transported. In the case of this strategic question, it is evident that the G.W.R. managers perceived the problem clearly, and that they endeavoured to grasp the opportunity offered by the 1923 grouping by instigating measures to change both the capacity and the use of mineral wagons. Nevertheless final success eluded them.

- (1) It has been calculated that in the 1920's approximately 20 percent of railway traffic receipts and just over 50 per cent of freight traffic net ton miles were produced from the coal trade. The railway managers were well aware that raising the capacity of wagons from the customary ten or twelve tons to twenty tons would bring considerable advantages. With an increase in capital costs of only 50 per cent, and of tare weight from 22 to 50 per cent, earning capacity could be raised by 100 per cent. Taking the opportunity
- (2)

- 
1. G Channon, "The G.W.R. under the British Railways Act of 1921," Business History Review, Vol LV, No:2 (Summer 1981), p212.
  2. Ibid. See also 'General Manager's Report to Traffic Committee,' 11th October 1923, RAIL 250/450, P.R.O. and 'Report of the Royal Commission on the Coal Industry' 1925, p97, RAIL 1119/122, P.R.O.

of the amalgamation which gave them a new monopoly in most of South Wales, and also the apparent opportunity of the coal export boom of 1923, the G.W.R. launched a campaign to persuade wagon owners to change to the new twenty-ton capacity wagon. Sir Felix Pole, as general manager, put his prestige fully behind the campaign, for example by personally addressing the Cardiff Business Club. In August 1924 the G.W.R. sent two trains to Severn Tunnel Junction as a demonstration; both were made up sufficient to convey a payload of 500 tons of coal. The train of 25 G.W.R. twenty-ton wagons was 612 feet long, but the train of 50 wagons of lower capacities had a length of 1,009 feet.

(3)

The publicity campaign was followed by a programme of construction and marketing. One thousand wagons in total were ordered from four outside contractors, and 200 were put under construction at Swindon. On

(4)

25 August 1924, fifty twenty-ton wagons were delivered to North's Navigation Co at Maesteg, and the following day a shipment of coal was conveyed to Port Talbot. This appears to have been the first commercial use of these wagons, although it is recorded that by the end of the year there were

(5)

a total number of 700 in use and that the ports of Newport and Swansea were also dealing with them regularly. The Goods Department Report of 1924 lists five companies which had started using them, and it is stated that two others

(6)

"are also seriously considering the matter." The Traffic Department Report for the same year also reports initial success in introducing the wagons, reporting a 15 per cent gain in the paying load obtainable, but in caution

---

3. Nock, G.W.R. p 41.

4. 'Docks Department Report 1924', RAIL 253/431, P.R.O.

5. Ibid.

6. 'Goods Department Report 1924,' RAIL 253/431, P.R.O.

(7) adds that complete train loads cannot often be achieved "owing to the comparatively small number of wagons in use and having regard to colliery and shipping requirements."

(8) This note of caution foreshadows the problems to come. The 1925 Goods Department Report states that prospects for the new wagons were now uncertain because of the (unexpected) depression in the coal trade, although attempts were being made (with limited success) to make use of the wagons for other goods as well. More immediately serious was the bare statement in the same report: "Stockwell, Peck & Co., who were in possession of 25(20-ton wagons) gave notice of their inability to continue to use them."

(9) A similar entry in the 1927 Goods Department Report gives the reason: "Messrs W.D. Rees & Co. have asked to be released from the hire of the 20 wagons, owing to the colliery from which they now draw supplies being unable to deal with the higher capacity wagons...." The overall problem with the introduction of twenty-ton wagons was that the handling facilities, such as weigh-bridges, hoists, and sidings, needed to be modified in order to deal with them. Some of these facilities, particularly at the various (10) docks, were now in the hands of the G.W.R. itself following grouping. The Company was at least consistent in following-through its investment in the (11) wagons themselves with the necessary interrelated investment in its own (12) handling facilities. By 1927 there were 39 hydraulic hoists suitable for

---

7. 'Traffic Department Report 1924,' RAIL 253/431, P.R.O.

8. 'Goods Department Report 1925,' RAIL 253/432, P.R.O.

9. 'Goods Department Report 1927,' RAIL 253/434, P.R.O.

10. 'General Manager's Report' 11 Oct. 1923, RAIL 250/450, P.R.O.

11. 'Mins of Chief Officers' Conference' 15 June 1925, RAIL 250/144 P.R.O.

12. 'Annual Report of C.M.E., 1926, RAIL 258/304, P.R.O.

twenty-ton wagons in the Docks section, while at the end of 1928 it could be reported that:

13) "There are now 7 hoists at Barry, 11 at Cardiff, 12 at Newport, 4 at Penarth, 6 at Port Talbot and 9 at Swansea, making a total of 49 capable of dealing with 20-ton wagons."

However, many of the handling facilities requiring modification were still not in the hands of the G.W.R. itself, but instead belonged to the iron and steel works and the collieries. At a time when their industries were entering decline, they were being asked by the G.W.R. to spend money on their facilities, apparently purely for the benefit of the railway. Co-operation was thus required between separate but vertically related industries in order to bring into use these cost-saving twenty-ton wagons.

14) To tackle this problem the G.W.R. managers at least realised that friendly persuasion would not suffice. In 1923 the Company offered a 5 per cent reduction in charges for fully loaded twenty-ton wagons, and in his address to the Cardiff Business Club in 1924 Sir Felix Pole extended the 5 per cent rebate to include dock charges. He stated in his address that the Company was spending some £2 millions on the reconstruction of tipping appliances alone - the Company's reconstruction in the Docks section has already been recorded. But by the end of 1925 the coal industry was already in deep recession, and the coalowners did not find the need to make the necessary capital expenditure sufficiently pressing. The enlightened offer of a 5 per cent reduction in various costs might have been more tempting when the coal industry was thriving, but this was no longer a propitious time.

---

13. 'Annual Report of C.M.E., 1928,' RAIL 258/304, P.R.O.

14. Nock, G.W.R. p39.

The coalowners could continue to get by with the use of low capacity wagons, and the G.W.R. never tried to take the drastic step of trying to force the smaller wagons into obsolescence. To try to force the hands of the collieries would have been politically very controversial; nationally, damaging their image as public servants and common carriers; locally, as the recent benign successors to the previously locally-owned railways. Thus the G.W.R. depended on a combination of friendly persuasion and inducements, while the coalowners, still allowed the freedom to choose, naturally under the circumstances chose the short-term expedient of inaction.

(15) Nevertheless when the Royal Commission on the Coal Industry reported in 1925, and came out in favour of the use of twenty-ton wagons it proposed nothing new in the ways in which this should be brought about. It considered that compulsion was wrong, and that it was for the Railway Companies to spread the benefits of the economies by offering more inducements to coalowners. In this respect the G.W.R.'s incentives were specifically commended but as a "first step" only. The Commission explicitly placed a lot of hope in the fact that most wagons were now twenty years old and would need replacing soon, and the replacements would be of a twenty-ton capacity. To monitor the progress of its recommendations a Standing Committee on Mineral Transport was set up. However the fact remained that the private owners still had the option available of buying twelve-ton wagons, so they continued to exercise that option. The Railway Companies represented only

---

15. 'Report of the Royal Commission on the Coal Industry' 1925, p 104, RAIL 1119/122, P.R.O.

a few out of the many wagon manufacturers in the country, and in the context of a free market a railway company would have to be very brave indeed to refuse to supply the kind of wagon which the customer was specifically requesting. Accordingly the Standing Committee reported in 1929, in its first report, that:

(16) "The number of wagons built and purchased by Railway Companies and allocated specially to mineral traffic in the years 1923-8 numbered 40,507, of which 32,364 were twelve-ton wagons and 5,119 were wagons of 20 ton capacity or more."

For its part the G.W.R. were not major manufacturers of wagons, supplying to a large extent their own needs (see Table 5) alone. They attempted to prime the pump of supply of new wagons as described earlier, but to do more would have involved a further major strategic change in the company's structure and operations. Short of that, the only measure not taken was to complete the conversion of the Company's own tiny stock of mineral wagons to the twenty-ton capacity. They phased out the very low capacity wagons with some success, but the impression is conveyed that during the 1930's the Company was forced to accept the reality of the collieries' inertia. It is the twenty-ton stock which was contracting before long, presumably because of the continued limited handling facilities in private hands which in turn limited their value (Table 6).

However small the G.W.R.'s share of the total stock of mineral wagons, their failure to achieve complete transition of their own stock is still perhaps disappointing. Nevertheless nationally the proportion of

(17) Railway Company-owned wagon stock which was of a twenty-ton capacity rose

---

16. 'Report of the Standing Committee on Mineral Transport,' 1929, RAIL 1053/343, P.R.O.

17, Ibid p32f



Table 5 - Wagons (all types) completely renewed 1923-38

1923	234	1931	1755
1924	1686	1932	979
1925	1767	1933	1414
1926	1766	1934	2504
1927	2044	1935	3236
1928	1638	1936	4367
1929	1482	1937	5127
1930	3188	1938	2807

Constructed from 'Annual Reports & Accounts' RAIL 1110/197, P.R.O.

Table 6 - G.W.R.'s own stock of Mineral wagons 1928-38

	<u>10 tons (and under 12)</u>	<u>12 tons</u>	<u>20 tons and over</u>
1928	173	501	951
1929	172	501	971
1930	168	501	971
1931	148	501	971
1932	139	501	971
1933	129	501	871
1934	121	501	772
1935	114	501	771
1936	104	501	628
1937	103	501	621
1938	93	501	621

Constructed from 'Annual Reports & Accounts' RAIL 1110/197, P.R.O.

only from 9.9 per cent to 13.47 per cent. In the private sector, with change being only encouraged and not enforced, the Standing Committee found that:

"In the six years 1923-8, 101,753 wagons, out of a total of 106,220 coal and coke wagons registered to run on the standard gauge railways, were twelve-ton wagons. It may be added that only 2,188 were wagons of 20-ton capacity or over."

(18)

---

18. Ibid. p30

(19) Furthermore they reported that whereas 93 per cent of the railway-owned handling facilities had been suitably adapted, "only half" of privately owned facilities had been so converted.

In the only indication of any attempt to force the issue, the Committee bravely concluded:

(20) "... we further recommend that after 1st January 1932, provided by that date reconstruction has been, or is in process of being, carried out at the majority of such terminals, no wagons of smaller capacity than twenty tons shall be constructed for mineral transport unless permission is given to meet special circumstances."

Although there is little evidence of any concerted attempt to enforce this recommendation in practice, there was one practical gesture of support from the government when the Minister of Transport made an announcement in the House of Commons on 17th December 1930:

"MR. HERBERT MORRISON: I am glad to announce that, as the result of conference with the railway companies, the Mining Association and National Federation of Iron and Steel Manufacturers, a scheme has been approved under which the railway companies are now prepared, in approved cases, to carry out these works of improvements, (i.e. the provision of improved terminal facilities at Collieries and private sidings), by arrangement with the traders with the assistance of grants under Part 1 of the Development (Loan Guarantees and Grants) Act, 1929. The Government grants will be on scales similar to those already accorded to schemes for provision of like terminal facilities at ports, and will have a present value equivalent approximately to 30 per cent of the cost of

---

19. Ibid. p40

20. Ibid. p41

the works. The whole benefit of the Government grant will be passed on to the traders by the railway companies, who have, moreover, agreed to provide the finance of the scheme in the first instance, subject to repayment by the trader within a period of 15 years with interest at  $5\frac{1}{2}$  per cent. The railway companies are prepared to consider forthwith, subject to their own financial limitations, applications under this scheme from owners of colliery or other private sidings."

(21)

On this issue, therefore, the Railway Companies were being offered more practical government help than was customary, and for its part the G.W.R. was taking all measures available to persuade the collieries to adapt to twenty-ton wagons - short of taking over the entire wagon-building industry.

As is already clear, the problem of introducing the twenty-ton wagon cannot be separated from the peculiar system of private ownership of wagons. This question was discussed in some detail by a Royal Commission in 1925, which contrasted the British pattern of wagon ownership with the pattern in France, Belgium and Germany where "the wagons are, generally speaking, railway-owned, and there is a complete common user." Also in these countries the twenty-ton wagon was standard. However in Great Britain:

(22)

"The existing system of ownership of railway wagons is the outcome of the history of the British railways. At first the railways were intended to provide only the track and haulage, and users were expected to provide their own wagons .....

---

21. Hansard, 17 December 1930.

22. 'Report of the Royal Commission on the Coal Industry', 1925, RAIL 1119/122, P.R.O.

"It may be estimated that at present there are almost 700,000 coal wagons in Great Britain. Of those, about 520,000 are privately owned..."

Even within Great Britain a wide variations in pattern was reported. From the Kent coalfield, where the Southern Railway provided all the wagons, through Scotland (40 per cent privately-owned wagons) and the North and North Midlands ("the bulk" privately owned) the opposite extreme was South Wales where the traffic was carried "almost exclusively" in privately-owned wagons.

The inefficiencies caused by this particular problem were once again only too well understood by the G.W.R. managers. There is evidence to suggest that the 55 per cent increase in receipts per freight-train-mile between 1900 and 1912 on the G.W.R. as a whole was achieved by better internal freight operating practice (e.g. better train control and assembly). This experience would have highlighted for them, by contrast, the inefficient running of South Wales mineral wagons - something beyond their control until 1914. During the Great War, however, the railways became subject to the administrative co-ordination of the Railway Executive Committee. Economies were achieved at a time when the rail transport of coal increased considerably due to the amount of coal shipped by coast dropping from 20.5 million to 13 million tons between 1913 and 1919, bringing a 23 per cent increase in the G.W.R.'s freight train mileage 1913-17. The common-user scheme for wagons was introduced early in 1917, which considerably helped the railways to take the strain of the increased work through its much more efficient use of rolling stock. It was

---

23. G. Channon, "G.W.R. under 1921 Act," p193.

24. Ibid. p195

(25) estimated that between October 1913 and October 1923 the running of empty wagons 'at the main junctions' was reduced by 46 per cent because of this measure.

The 1923 grouping gave the G.W.R. the opportunity to capitalise on this experience. Although there was competition from the L.M.S. for traffic from South Wales to the Midlands and North of England, the G.W.R. now dominated the rail traffic within the principality. The wartime experience of administrative co-ordination could now be renewed, they hoped, under peacetime conditions; this meant the pooling and standardisation of the stock of mineral wagons. The 1925 Royal Commission on the Coal Industry sketched the problem and gave the green light for action, and also gave some very circumscribed help. Having outlined the ownership patterns in different parts of the country, and contrasted them with France, Belgium and Germany (the result of investigations by C.E.R. Sherrington, Secretary of the Railway Information Bureau), the commission came out in favour of an increase in wagon pooling and standardisation. It observed that there were 57 different types of privately-owned wagon, and even among railway-owned wagons the G.W.R. had 23 different types - compared with the Southern Railway's seven (although the northern companies had even more). Increased standardisation was seen as necessary if different owners were going to be using each other's wagons under a pooling arrangement. However the Commission insisted that pooling should not be forced on the private owners, and the onus was placed firmly on the Railway Companies to offer inducements to the owners to co-operate. The main outside help was to be the Standing Committee on Mineral Transport in order to monitor progress.

(26)

---

25. 'Report of the Standing Committee ...' 1929, RAIL 1053/343, P.R.O.

26. Quoted by the 'Standing Committee...' 1929, p31.

- Therefore between 1925 and 1929 (when the Standing Committee first reported), the colliery companies and railways were merely encouraged
- (27) to co-operate, and the ineffectiveness of this is illustrated by the failure of a pooling proposal in 1927. At that time there were some 110-120,000 privately-owned mineral wagons in South Wales, of which
- (28) 43,000 were pooled between a combine of eight collieries. In March 1927 the G.W.R. were approached by Mr Merrett of Messrs Gueret Llewellyn & Merrett who were the Sales Agents for Messrs Guest, Keen & Nettlefolds, a firm which controlled "directly and indirectly twenty five collieries in the District owning between them 25,300 wagons."
- (29) The proposal was that these wagons should be pooled by means of setting up a new Wagon Company, in which the G.W.R. were invited to invest heavily.

- This investment decision was discussed at a special Meeting on 5th April, 1927, a meeting of professional managers whose recommendations were
- (30) presented by the General Manager to the Traffic Committee on 28th April 1927 and accepted. The Meeting, with its negative recommendation, offers not only an example of how a major investment decision was considered at a professional management level, but also in doing so illustrates why wagon pooling was so difficult to achieve without outside support. The advantages to the collieries were clear, and honestly stated by Mr Merrett in his proposal: first, they could avoid altogether the wagons from outside firms, saving "the £98,000 paid to wagon hiring firms in the year 1924," and secondly, wagon repairs could be concentrated at a few depots instead of each colliery having its own repair depot. Mr Merrett suggested that the

---

27. 'G.W.R. Secretarial papers: Pooling of mineral wagons,' RAIL 258/460, P.R.O.

28. Ibid

29. Ibid

30. Ibid

G.W.R. would benefit from a decrease in shunting and unnecessary mileage, and that the money raised from the new Company would increase mineral traffic. However the Memorandum arising from the meeting pointed out that these advantages to the G.W.R. were limited by the fact that the collieries were not all in the same area and that the fullest advantage would only be obtained by complete pooling within the region. More importantly, the entire proposal hinged on Mr Merrett's valuation of the wagons of £2 millions, and consequent invitation to the G.W.R. to invest a sum of £800,000 in floating the new company. However, the C.M.F. had valued these wagons in 1925 as being of scrap value only, some £304,000, (32) being mainly wooden-framed and obsolete, and that effectively dished the proposal.

But although the Meeting came to this negative reaction to the proposal, it nevertheless also considered immediate alternatives and the long-term view. The main alternative was that all privately-owned wagons should be taken over directly by the G.W.R., a measure which the Meeting recognised would bring the maximum benefit in economy, but which nevertheless had to be rejected for three reasons:

1) The recent Coal Commission reported that all parties concerned were definitely opposed to the wagons being brought into the ownership of the railway companies.

2) A very large proportion of the wagons consists of wooden-framed vehicles, fitted with grease axle-bones, whose economic life has expired. Such wagons would be useless to this Company and could only be purchased at scrap value, a proposal which the colliery companies would not be likely to accept.

---

32. Ibid.

(33) 3) Any proposal for the compulsory acquisition of all private owners' wagons would be opposed in Parliament and the Company might be faced with heavy claims for compensation from wagon hiring and repairing firms for loss of business, as well as from the colliery companies for loss of wagon hire."

The Meeting thus preferred the proposal for a separate Wagon company, although the second reason given above also effectively forestalled that proposal as well. Their final conclusion was that it may be possible to consider it more favourably once the Standing Committee had submitted its first report.

(34) This good intention was not forgotten, for the G.W.R. managers pursued the long-term objective by obtaining from Parliament (following the arrival of the Standing Committee's favourable first report in October 1929) under the Great Western Railway Act 1931 the "powers to subscribe to the capital of any Wagon Company incorporated for the sole purpose of providing mineral wagons for use in common...." Accordingly when the Company were approached by the Welsh Associated Collieries Limited, "the largest individual wagon owners in South Wales" with a proposal to form a new Wagon Company, this was supported by the General Manager's Memorandum to the Board of Directors on 9th October 1931, by the Board when it met that same day, and by the Chief Officers' Conference on 19th October. It is clear from the agreed proposals on that date that the G.W.R. wished to use the opportunity to its fullest advantage to press for the widest possible use of twenty-ton wagons:

"1. A Wagon Company be formed to take over all privately-owned wagons operating within the agreed area in South Wales:

---

33. Ibid.

34. Ibid.



2. The Capital of the Wagon Company would be about £2,000,000 of which about £700,000 would be subscribed by the Great Western Company.
3. The number of wagons to be taken over at an agreed valuation would be about 40,000, or rather more than one-third of the total number operating in South Wales, and, in addition, any Great Western 20-ton wagons operating in the area would be included.
4. Only those wagons built in accordance with the latest R.C.H. Specifications for 10, 12, or 20-ton wagons would be taken over by the Wagon Company.
5. The Colliery Companies to give an undertaking not to use any wagons other than those provided by the Wagon Company.
6. The wagons to be hired out by the Wagon Company on a tonnage basis, at rates which, after making full provision for renewals, will yield a return on the Capital of the Wagon Company of not less than 6 per cent based upon the present tonnage of coal conveyed. Demurrage charges to be imposed in cases where an excessive number of wagons are used for the storage of coal.
7. The Wagon Company will provide for the renewal of the existing wagons on the basis of a twenty-five years' life, and all new wagons constructed will be of 20-ton capacity, except in cases where the wagons are required for the conveyance of inland coal.
8. The new Wagon Company to be paid the special allowance of 5 per cent off the railway rates allowed by the Railway Company in respect of all coal conveyed in 20-ton wagons. The receipts from this source to be used for expediting the replacement of existing wagons with those of 20-ton capacity, or providing additional 20-ton wagons.

(35) The negotiations are proceeding."

---

35. Ibid.

Nevertheless despite the level of planning and execution of the measures described here, the G.W.R.'s success in bringing about pooling was limited, and in spreading the use of twenty-ton wagons very limited indeed. To implement these strategic changes they needed the hearty co-operation of a separate, fragmented and depressed industry. Many elements of that industry were opposed to pooling; the National Council of Coal Traders and the Coal Merchants Federation were reported to be opposed to the idea because it eliminated the advantages of individual effort. Since there was therefore no compulsion, those who wanted to stay out (usually the small owners) could stay out, and with pooling incomplete many of its advantages were not fully realised. With twenty-ton wagons, although apparently "colliery owners themselves are in no way hostile to the introduction of large wagons," the fact was that despite the G.W.R.'s inducements the depressed coal-owners could continue to get by without spending the money necessary for the transition.

But for this inquiry the nature of the G.W.R.'s efforts are more important than the reasons for their lack of success. On the subject of mineral wagons the G.W.R. managers had been faced with two interrelated strategic issues. The key thinking on these issues seems to have been done not by the Board, nor by an outside consultant, but by the G.W.R.'s professional managers. Originally an issue carrying the personal active backing of Sir Felix Pole, the mineral wagon issue was pursued with some consistence in long-term planning and execution by his colleagues. Within the context of government support which was again only of a permissive nature, the G.W.R. did almost everything within its power, both in plans and actions, to invest for strategic change in this area.

---

36. 'Report of the Standing Committee...' 1929, p 35, RAIL 1053/343, P.R.O.

37. Ibid. p 32.

Strategic decisions:iii) Swindon Works - more than meets the eye

The railway works at Swindon exemplify the level of vertical integration of a large British railway company. In the 1850's the G.W.R. had to re-invest heavily in establishing their own manufacturing and supply service at Swindon when they had discovered that they could not obtain a satisfactory service from outside contractors. Therefore from the time of Sir Daniel Gooch the Company had maintained a heavy commitment to the Works, even through the 'Great Depression' period at the end of the nineteenth century.

- (1) The relative stability of the Swindon Works during that period illustrated both the dominance within the management of the Company of the voice of the technical or engineering expert, and the very real work such as the re-~~enging~~enging and the measures for increased safety and comfort of passengers which the Company could not avoid tackling at that time. But, whether implicitly or explicitly, the Works remained in the early twentieth century a standing strategic issue -- was it to the Company's overall advantage to maintain expand or contract its own internal manufacturing and supply service? Furthermore, as has been touched on already, such a decision could not be considered in isolation from other strategic issues. Electrification would have involved the closure or complete conversion of the Locomotive Works, while one option within the Company's mineral wagon policy might have been to go into its own manufacture of wagons on a major scale. Even without such wider considerations, the place of the Works within the Company was a live issue, and it will be shown here that during this period the Company

---

1. D.H.C. Eversley, 'The G.W.R. and the Swindon Works in the Great Depression', in M.C. Reed, Railways in the Victorian Economy, 1969.

was not 'drifting' in this matter. The management had considered and arrived at a policy, and applied it with reasonable success under the circumstances.

However this is not immediately evident at first glance. As was mentioned earlier, the Report of the Sub-Committee of Economies Consequent upon Amalgamation (1923) avoided detailed discussion of the idea of re-structuring the Company's manufacturing and repairing operations on

(2) the apparent grounds that such economies would be "difficult to measure."

Furthermore, in the subsequent Annual Reports of the Chief Mechanical Engineer there is rarely any discussion of the reasons for the different operations undertaken during the year. For example there is no explanation in the reports themselves why the Company bought a number of locomotives from outside contractors between 1925 and 1930 when for at least part of

(3) that time Swindon men were on short time.

The reports are products of an apparently self-contained department, whose focus is more on its own quality of engineering rather than seeing itself as a part of a large enterprise.

This is perhaps conveniently illustrated by the activities of the C.M.E.'s

(4) department's statistical section, which was the subject of a report by the General Manager in 1927. This report also illustrates the general management's failure to tackle the problem by attempting any re-structuring of the Company. The statistical section's activities are not only summarised in this substantial report, but conclusions are also drawn about the future use of these statistics; but in doing so it tells a story of unfulfilled

---

2. 'Report...', 1923, RAIL 258/453, P.R.O.

3. 'Annual Report of C.M.E. 1928' p.11, RAIL 258/304, P.R.O.

4. 'Report by the General Manager on statistics compiled by the C.M.E.'s department at Swindon', June 1927, RAIL 253/390, P.R.O.

potential. The section had originally been established as a consequence of one of the recommendations made by Sir William Flender between 1911 and 1914, of which more later. As the G.W.R.'s auditors, Messrs Deloitte, Flender, Griffiths and Co had investigated the accounting methods of the C.M.E.'s department in 1912 and commented:

"It is a matter for surprise and regret that it has not been considered necessary in the past to make any attempt at maintaining accounts to shew the actual cost of big repair jobs (in any rate in regard to those of an unusual or special nature, e.g. alterations to type, improved boilering etc) or again to shew comparative costs as between one type of engine, or one age-group and another.

It can hardly be open to question that the maintenance of a proper system of Cost Accounts is of substantial value in the interests of control and economy, and the absence thereof in respect of such large and important Works as those at Swindon cannot be regarded otherwise than as a serious defect in the organisation."

(5)

Suspended during the Great War, the activities of the statistical section resumed in 1919, and the method of obtaining the cost of each individual engine repair is described in the Report. Subsequently a section of the Report entitled 'Use made of costs' lists the summaries of information which were passed to the Locomotive Committees and the Works Manager. Finally there is a paragraph on 'Use made of information generally' which at first shows great promise. Not only did the gathered information enable the Company to challenge and reduce quotations for repairs by outside firms, but also if the system were in operation at Outstation Depots "it should be

---

5. Ibid. p39.

(6) of value in comparing the cost of individual repairs at one Depot with similar repairs at other Depots, and at Swindon Works." Thus the potential was there for the Company to make a 'tactical' evaluation of its manufacturing and repairing operations; the measuring of repair costs in the various existing Depots and Works, and the consequent shuffling of jobs between these Depots, would have been within the Company's existing overall balance of operations and therefore 'tactical'. Yet the evidence is not to be found, certainly not in the C.M.E.'s subsequent annual reports, that this evaluation was ever done in a systematic way, despite the above recommendation. Accordingly it is not so surprising to find no 'strategic' evaluation of these operations, which might have involved a change in the current balance of the Company's total operations as suggested originally by the Government committee in 1918. (See page 16).

Some of the reasons why this statistical section did not deliver all it promised are perhaps also shown in the attitude of the writer of this Report in 1927. Within this Report he seems as concerned to assess the efficiency of the statistical section itself as he is to assess its ability to assist the C.M.E.'s department. Among the conclusions to Section A is a recommendation that more female staff should be recruited to replace vacancies arising among the male staff. On a more fundamental level, there follows a disappointing conclusion to an attempt to consider whether the statistical section might contribute more to the Company as a whole if it were placed elsewhere within the Company structure. It is noted in the conclusions to two of the Sections that in the L.M.S. and L.N.E.R. the respective departments compiled their own statistical returns which were

---

6. Ibid. p43

7. Ibid. p23

then made available for head office use. Only the Southern Railway had a centralised General Statistical Section under the Chief Accountant, giving the opportunity for direct analysis and comparison of both engineering (e.g. locomotive and rolling stock maintenance) and traffic costs (i.e. traffic working etc). But the writer does not even mention the possibility that such a centralised system might enable the general management to make better-informed long-term strategic investment decisions. Section A merely concludes limply:

(8) "The transfer of this work to a general statistical office is of course feasible but it will be observed that the information produced is used principally by the Chief Mechanical Engineer's Department, and as the accounts of the Department are also under the Chief Mechanical Engineer, ready access to the mileage figures in the various accounting settlements is of great convenience. It is doubtful, therefore, whether in any other circumstances, equal use could be made of the information and we recommend that no change be made in this respect."

(9) Equally limp conclusions to Section B (on Locomotive records), Section C (for Accounts Office) and Section D (for the Traffic Department) all beg the question of whether the different groups of statistics could have been of more value to the company if co-ordinated under head office general management.

This disappointing first impression is conveyed because of the apparent insular attitude of the strong C.M.E.'s department, and because general management appeared to allow them to retain relative autonomy. However, it

---

8. Ibid. p24 This looks suspiciously like the 'My dog doesn't eat meat' argument ('...because I don't give him any.')

9. Ibid. pp37, 52 and 73.

was ironically that department's 'political' strength within the Company which brought about the means to control that same department, and the establishment of a coherent long-term policy. It was in April 1911 that C.J. Churchward (C.M.F. June 1902 - December 1921) pressed for a major programme of construction, and therefore expansion, at Swindon Works. From his initiative the Board of Directors considered on 7th April a recommendation from the Locomotive, Carriage and Stores (hereafter L.C.S.) Committee that in each year the Company should construct:

(10)

<u>Locomotives</u>		<u>Carriages</u>		<u>Wagons</u>	
Renewals:	Additional:	Renewals:	Additional:	Renewals:	Additional:
125	30	112	50	140	60

(11)

The minute of that meeting states that the Board agreed to the recommendation, but this approval was nevertheless in effect withdrawn at a further meeting on 26th May 1911. On that date it was decided that the Board would be best advised by an independent report. Possibly spurred on by the coming into force of the Railway Accounts Act that same year, the Board chose a member of their firm of auditors, William Plender (soon-to-be-knighted), to prepare this report and in effect provide a lever against the powerful C.M.F.'s department. In the request for the report Mr Plender was asked to submit:

(12)

"...an independent investigation as to whether Swindon Works should be extended to deal with the increasing arrangements of the Company, and to submit information as to the system of accounts, records and arrangements generally in operation at Swindon to enable the Board to come to a decision as to future policy in regard to the Works."

10. 'Minutes of C.W.R. Board,' 7 April 1911, RAIL 250/53, P.R.O.

11. Ibid. 26 May 1911

12. Ibid. See also Alan Peck, The Great Western at Swindon Works, Poole, 1983, p166ff.



The auditors' comments about the accounting at Swindon have been recorded earlier here, and in addition three separate reports were submitted between 1912 and 1915: on locomotives, carriages and wagons. On 1st November 1912 the Board considered the first of these reports, and it appears that Sir William Plender's recommendations were quite specific:

(13)

First, "methods of costing at Swindon are not sufficiently scientific to supply exact statistics to enable a comparison between the costs in constructing locomotives there and the costs of outside Firms for similar work..."

Second, although such comparisons as he had been able to make "appear to justify the view that the cost of building at Swindon is lower than that shown by such Companies and Firms," nevertheless there are "Important questions other than relative cost" to be considered. He cited "Labour unrest, difficulties and cost of providing Capital and the need for heavy expenditure in other directions." and concluded that extensions to the Swindon Works should only be such as to enable the repair programme to maintain the existing locomotive stock:

"Sir William suggests therefore that the Directors would be well advised to sanction an extension of the Works necessary for meeting the needs of the efficient upkeep of the present locomotive stock, it being understood that any slackness in repair operations should be taken advantage of to carry through constructional work, but that no extensions should be authorised which are based primarily upon the proposition to build additional stock."

The Board were thus able to instruct the C.M.E. to set in motion a programme of renewals which was much more circumscribed than that originally

---

13. 'Mins of G.W.R. Board,' 1st November 1911, RAIL 250/53, P.R.O.

proposed by him in April:

"The Board after fully considering the matter determined that the policy to be adopted in regard to the Works at Swindon should be based generally on the lines recommended by Sir William Plender, and requested Mr Churchward to prepare and submit the plans and proposals for a comprehensive scheme such as he considers it would be necessary to adopt to meet the requirements during the next ten years for repairs and renewals of locomotive, carriage and wagon stock as distinct from the construction of additional stock..."

(14)

This policy was largely echoed in respect of the carriage department when the Board received and discussed Sir William's second report on 19th March 1915; a "scientific basis for renewals" was to be adopted, meaning that the renewals programme should take care to maintain existing stock and that the costs of this should be scientifically evaluated:

(15)

"The general conclusion at which Sir William has arrived is that while the Company's carriage stock has been increasing the average age has also increased, which points distinctly to the necessity for the adoption of some scientific basis for renewals and that after carefully considering the various factors he is of the opinion that the provision of carriage renewals should be based on an estimated life of 33 years for the steam drawn coaching stock and 15 years for the electric coaching stock. On this basis 3 per cent and 6.6 per cent respectively of the actual cost value of the stock should be set aside annually, which would mean for 1915, £170,000, and it is recommended that this basis be agreed to.

"Speaking generally Sir William's report confirms the view as to the desirability of definitely adopting the policy of a programme of renewals

---

14. Ibid.

15. 'Mins of G.W.R. Board,' 19 March 1915, RAIL 250/53, P.R.O.

16)

to be submitted to the Directors each year and it will be necessary for the Officers to agree not only the character and types of rolling stock to be provided on Renewals Account but also the extent to which such renewals will meet the expanding requirements of the undertaking and the amount of additional provision to be made on Capital Account."

TABLE 7

Stock construction programme approved by Board of Directors on  
19th March, 1915

	Expenditure on account of existing votes	New votes now requested	Estimated Expenditure	
			1915	1916 (Balance)
Locomotives	149,426	30,000	152,888	26,538
Carriages	82,161	210,899	170,035	123,025
Wagons	74,194	278,890	219,724	133,360
Totals	305,781	519,789	542,647	282,923
Grand Total	825,570		825,570	

Source: "Mins of G.W.R. Board," RAIL 250/53, P.R.O.

With a similar report, received in June 1915, reaching similar conclusions in relation to the wagon department, the overall strategic policy thus became explicit for both locomotives and rolling stock: Swindon Works were to have the capacity both to repair and to renew in order to maintain existing levels of stock, but any building of additional stock would be done by outside contractors. Mr Churchward could not win for his department the level of expansion which he had sought in 1911, but nevertheless from 1915 the Company had formally committed itself to maintaining a sub-

16. Ibid.

stantial, stable commitment to its own Works at Swindon.

However, in the following 25 years the Company experienced a wide range of new conditions hitherto never anticipated; this would test the managers' willingness and ability to carry through the policy on which they had resolved. As will be seen, they succeeded in maintaining their agreed level of commitment with reasonable success, but this in turn created other problems.

The leading example of their immediate implementation of this policy was the reconstruction and extension of 'A' Shop at Swindon. This new locomotive shop was required in order to fulfil the new renewals policy described above. Votes for initial construction were approved in (17) December 1913, and, although the Great War clearly delayed the programme, the final vote to complete the extension was made by the Board on 9th November 1923. During those ten years a total of £438,262 had been (18) invested by the Company on 'A' shop, and there was no subsequent single 'unit' of investment at Swindon which was as great before the Second World War.

Nevertheless investment continued at Swindon during this period at a fairly steady pace on a series of smaller 'items'. The first example of this was the new coal gas works. The need for this modernisation was pressing, and originally £30,000 had been voted for this in 1914, although the work had been postponed until after the war. With the growth of

---

17. 'Mins of G.W.R. Board,' 12 December 1913, RAIL 250/53, P.R.O.

18. 'Mins of L.C.S. Committee,' 8 November 1923, RAIL 250/215 P.R.O.  
Alan Peck, Swindon Works, however records the figure £433,853.

(19) the extension of 'A' Shop during the later war years, the existing inadequate production of gas at the Swindon Works was increasingly evident. The matter was brought to a head by the submission of a report from the Chief Mechanical Engineer to the Board of Directors on 30th July 1920. The minute for that date reveals little of the discussion in detail; it states that the present plant was producing insufficient gas, that a modern vertical retort house on the Dempster-Poogood system was required at a cost of £190,470, that the total cost of installing a modern plant would be £275,000, and that this would (20) produce a saving of some £17,000 per annum. The expenditure was then approved, but further investment was required in 1922-3 as the current gas-holders were inadequate. The sum voted on 8th December 1922 of £60,000 was amended later to £49,000 to build a slightly smaller new (21) gas-holder with a capacity of 2.5 million cubic feet - this latter sum was finally voted on 13th April 1923.

Other additional works were also made necessary by the extension of 'A' Shop. A new extension to the iron foundry, to help with locomotive maintenance work, was requested by the L.C.S. Committee on 8th July, 1920, was approved and completed early in 1923 and the patternmakers shop was completed in 1924. A new carpenters shop, at a cost of £50,000 was also (22) approved in 1920, but then delayed until March 1923. Then in July 1924 the Board were persuaded that the Company should establish its own oxygen production plant at Swindon to establish a facility for oxy-acetylene work, (23) and that this investment of £6,300 was the cheapest way of doing this. The

---

19. 'Mins of LCS Committee,' 8 February 1917, RAIL 250/275, P.R.O.

20. 'Mins of GWR Board,' 30 July 1920, RAIL 250/53, P.R.O.

21. Ibid. 8 December 1922, 13 April 1923.

22. 'Mins of LCS Committee' 15 March 1923, RAIL 250/275, P.R.O.

23. Ibid. 24 July 1924.

(24) completion of this plant in January 1925 exemplifies the integration of all the Company's different investments at Swindon. It was largely made necessary by the new work undertaken in 'A' Shop, but in turn committed the Company to further investment of over £8,000 on the same plant in 1927 and 1929 due to increased consumption. These sums of money appear fairly trifling at first, but the list of new workshops, offices and additions at Swindon during the inter-war period shows how these accumulating small investments developed a momentum of their own following the original policy decision.

TABLE 8 - Dates of opening of Swindon Workshops, offices, and additions

Source: 'List of buildings,' RAIL 253/499, P.R.O.

1922	New Coal Gas Works Iron Foundry Extension
1924	Pattermaker's Shop (H) 'Q' Shop Extension Oxygen Plant installed Carpenter's Shop
1925	Platelayer's Shop
1926	New Gas Holder No. 19 Shop Lean-to (and Grinding House near 15 Shop) General Offices Extension
1928	Copper Stores. Lavatories near 24 Shop
1929	'P1' Shop Office and Stores
1930	New Saw Sharpening House (West End Saw Mills) Carriage Stock Shed (24) South End of 'B' Shed rebuilt New Spring Smiths Shop White-Metalling Shop (near 19)
1931	Extension North End of 'R' Shop Steam Accumulator
1932	Boiler Cutting-up Shop
1933	Chair Foundry Extension Carpenter's Shop (12)
1935	Covered accommodation for Platform trolleys Timber Stores

24. Ibid. 31 March 1927, and 25 July 1929

Each little item of investment no doubt followed on logically from the last, but the cumulative effect was not only to maintain the Company's substantial investment in Swindon, but also to restrict its choice of decisions in the future. It has previously been mentioned that larger scale electrification of the Company's track would make necessary very expensive alterations at Swindon. However, even on a smaller scale, the Company's managers found that the structure of their enterprise restricted their choice of strategies. It was only when the coal gas works were on the final stages of construction that a report was requested on power production at Swindon. This was undertaken by Mr J.A. Robinson, Consulting Engineer to the Metropolitan Vickers Electrical Company, who reported in July 1923. By then his recommendation that £105,000 be spent on a central steam-driven electric power station was too late. As was admitted by the author of a report to the Locomotive Committee on (25) 27th March 1924, if the Company were commencing their power production plans then they would probably go for Mr Robinson's recommendation. As it was, they felt he had overestimated the real savings which would be made, and this would not justify such a new investment so soon after completing the gas works.

But this was not a decision - only a postponement of the problem. In November 1924 the Chief Mechanical Engineer was recommending that the (26) Company establish a new power station jointly with the Swindon Corporation, and that £10,000 was required immediately for "converters, switchgear and connections" as part of that arrangement.

---

25. Ibid. 27 March 1924

26. Ibid. 27 November 1927

In February 1926 a twelve-year agreement was reached with the  
(27) Corporation to spend at least £21,850 per annum on electricity and  
the joint scheme went ahead. A further £39,000 was required in  
(28) April 1927. Thus the Company resolved the 'power problem' at  
Swindon, but took several bites at the cherry to do it. However,  
it is clear that the steady expenditure on capital projects, to build  
a highly interdependent structure for the G.W.R.'s operations, in turn  
restricted the future strategic choices available.

Yet within those available choices, although the Board of Directors  
sometimes seemed to behave in a 'Parkinsonian' manner, there are many  
indications that the professional managers of the Company put genuine  
planning and monitoring into the operation of their investment decisions.  
Three examples of this will be given, the first of which directly concerns  
the Plender recommendations which had been arrived at during wartime. A  
meeting took place on 11th February 1920 of the Chief Officer's Conference  
to plan how those recommendations on the renewal of locomotives and stock  
(29) should be put into practice:

- "1) The meeting was called to review the present position of the construction of rolling stock.
- 2) Before considering the programmes, emphasis was laid on the fact that no provision was being made for additions to the Company's stock of engines, carriages and wagons, but only for maintenance of existing stock. In accordance with Board Minute No: 16 of March 18th 1915 it is the function of the

---

27. Ibid. 25 February 1926

28. Ibid. 28 April 1927

29. 'Mins of Chief Officers' Conference,' 11 February 1920, RAIL 250/143, P.R.O.



C.M.E. to maintain the capital stock vehicle for vehicle, but, apart from the construction of improved engines or vehicles to replace those of older types, it is not in order to provide for growth of traffic on Renewals Account. When additional stock is required to meet growth of traffic, recommendations should be made to the Board through the General Manager as follows:

For additional engines on Capital Account by the C.M.E. and Superintendent of the Line.

For additional coaching vehicles by the Superintendent of the Line.

For additional wagon stock by the Chief Goods Manager."

The meeting went on to conclude that although Swindon could cope with current demands for renewals of carriages and wagons, shortage of available man-hours with the existing facilities meant that 200 locomotives would have to be repaired 'outside'. But the important point here is that the recommended renewal strategy was being monitored and operated in a planned fashion, and this was being done by the Chief Officers, the professional managers.

The second example concerns the extension to the existing carriage works at Swindon. Two memoranda were submitted to the Locomotive Committee early in 1925 making a forceful case for an increase in existing capacity. The first merely stated that net coaching train miles had increased from  
(30) 19 million to 38 million between 1894 and 1924. The second made out a more detailed case, making a list of the main points:

---

30. 'Memoranda to Locomotive Committee,' 26 March 1925, RAIL 253/305, P.R.O.

1. No carriage shop extension in the last 30 years.
2. Stock had increased from 5,890 to 10,246 in the last 30 years.
3. Length of vehicles had increased (total 32 miles to 80 miles) in same period.
4. Coaching miles still increased, depression not affecting requirements.
5. At present 25-30 per cent of work was being done in the open.
6. With no proper system, stock was going in and out of service frequently.
7. 8 - 10 per cent of stock needed to be in repair in order to maintain levels of stock, of which 5 per cent needed to be in Swindon to be economic. Even the proposed extension would increase Swindon capacity from  $1\frac{1}{2}$  per cent to  $3\frac{1}{2}$  per cent.
8. Heavy use in summer, therefore:-
9. 800 - 1000 vehicles idle at any one time with work required which could not be done outdoors.
10. New shops would:-
  - a) Give flexibility in dealing with winter and summer requirements.
  - b) Enable older carriage works to be re-organised.
  - c) Enable maintenance to be done in a systematic manner.
  - d) Spread the men about, so that they would not be in each other's way.
  - (31) e) Be more efficient, by costing less.

However no real calculation was made of the anticipated savings in costs, and the measure was not approved by the Board of Directors until 1928, when £125,000 was duly voted. Nevertheless a case had been argued, and then followed through.

---

31. Ibid. 30 April 1925.

32. 'Mins of G.W.R. Board,' 29 June 1928, RAIL 250/53, P.R.O.

The third example concerns the decisions made by the G.W.R. when they gained the offer of government-supported finance. The Loans and Guarantees (1929) Act was passed shortly after the then new Labour Government came to power. The purpose of the Act was to help to reduce the one million-plus unemployment figure by direct action; the motion in the House of Commons committee on 16th July 1929 proposed:

"That it is expedient....

1) To authorise the Treasury, after consultation with a committee appointed by them, to guarantee at any time within the period of three years from the thirty-first day of August, nineteen hundred and twenty-nine, the payment of the principal of and the interest on any loans to be raised for the purpose of meeting capital expenditure to be incurred under schemes for development, reconstruction or re-equipment in connection with public utility undertakings in Great Britain carried on under statutory powers by bodies of persons other than local authorities or such statutory bodies as are mentioned in paragraph 3 of this resolution (including loans the proceeds of which may be applied in part towards the payment of interest on the loans during a limited period), and to charge on the Consolidated Fund any moneys required to fulfil any guarantees given under this provision:--

"Provided that the aggregate capital amount of the loans so guaranteed shall not exceed such amount as is sufficient to raise the sum of twenty-five million pounds;

2) To authorise the Treasury, with the concurrence of the appropriate Government department and after consultation with the committee aforesaid, to make at any time within the period aforesaid grants for the purpose of assisting persons carrying on any public utility undertakings as are mentioned in paragraph 1 of this resolution in defraying, during a period

(33)

not exceeding fifteen years from the raising of the loan, the interest payable on any loan (not being a loan in respect of which a guarantee has been given under the said paragraph 1 to be raised for such purpose as is mentioned in the said paragraph 1)."

Much attention has traditionally been given to the very public works which were undertaken by the G.W.R. under this scheme, since by November 1929 the Company was proposing expenditure of £4.5 millions on a number of projects which would have an immediate appeal to their passengers. The by-pass lines at Frome and Westbury were approved at an estimated total cost of £220,000 (and completed in March 1933), the quadrupling of the line at Taunton between Cogload and Norton Fitzwarren was to cost £360,000 and major alterations were made to the passenger stations at Paddington, Bristol Temple Mead, Newport and Cardiff.

However a much less publicised investment, totalling £536,750 was also made from this same source in 1929. Some of this was for various facilities in South Wales, but over half of the sum was allocated to the Company's own repair and manufacturing service - on this occasion, mainly at Wolverhampton:

"Cardiff	- new carriage and wagon repair shop	57,000
Port Talbot	- new coaling and watering facilities etc	25,000
Landore	- remodelling of locomotive depot etc	26,000
Pontyffynon	- new engine shed	47,000
Radyr	- new engine shed etc	43,000
Treherbert	- new engine shed etc	48,750
Swindon	- alterations including improved lifting facility	27,000
Swindon	- amalgamate spring shops at Locomotive and Carriage Works	38,000
(34) Wolverhampton	- modern locomotive repair shops, new erecting machine and wheel shops, 6 new cranes etc	225,000

33. O.S. Nock, G.W.R. p 87

34. 'Mins of Chief Officers' Conference,' 10 October 1929, RAIL 250/144, P.R.O.

Once again this was a decision of the Company's professional managers, taken at the Chief Officers' Conference. Again it represented the Company's long-term commitment to maintaining its own repair and renewal facilities in line with the Plender recommendations. The public face of the Company stressed the improvements in traffic working (i.e. improved services to customers):

(35) "The principal considerations which guided the company in coming to their decision as to the schemes to be undertaken were the prospect of effecting substantial economies in working the traffic, the necessity for modernising equipment and appliances, and the desirability of carrying out improvements concurrently with renewals which would fall due in the near future."

(36) So wrote the General Manager, Sir James Milne, in 1933. But behind the scenes the Company was also maintaining its policy towards its own repair and renewal programme. Although these facilities were not rationalised, or centralised to the extent which Plender had envisaged, the Company reached a new stability in this area in the 1930's following the remodelling of the Works at Caerphilly. With the repair and renewal work now focussed jointly on the recently improved Swindon, Wolverhampton and Caerphilly, some of the uncertainty at these Works came to an end. Swindon had shed some 4,000 employees during the previous twenty years, but for the twenty years after 1933 Swindon was able to maintain a steady 10,000 in employment. This was a comparatively good position to achieve so soon after the start of a serious depression, and supports the idea that this did not come about from "muddling-through", as some first impressions suggest. Instead the Company's professional managers had established a clear policy to deal with the renewal question and then pursued it with reasonable success.

---

35. Supplement to Evening Standard, 24 March 1933, BAIL 253/499, P.R.O.

36. Alan Peck, Swindon Works.

#### IV Structure and Strategy

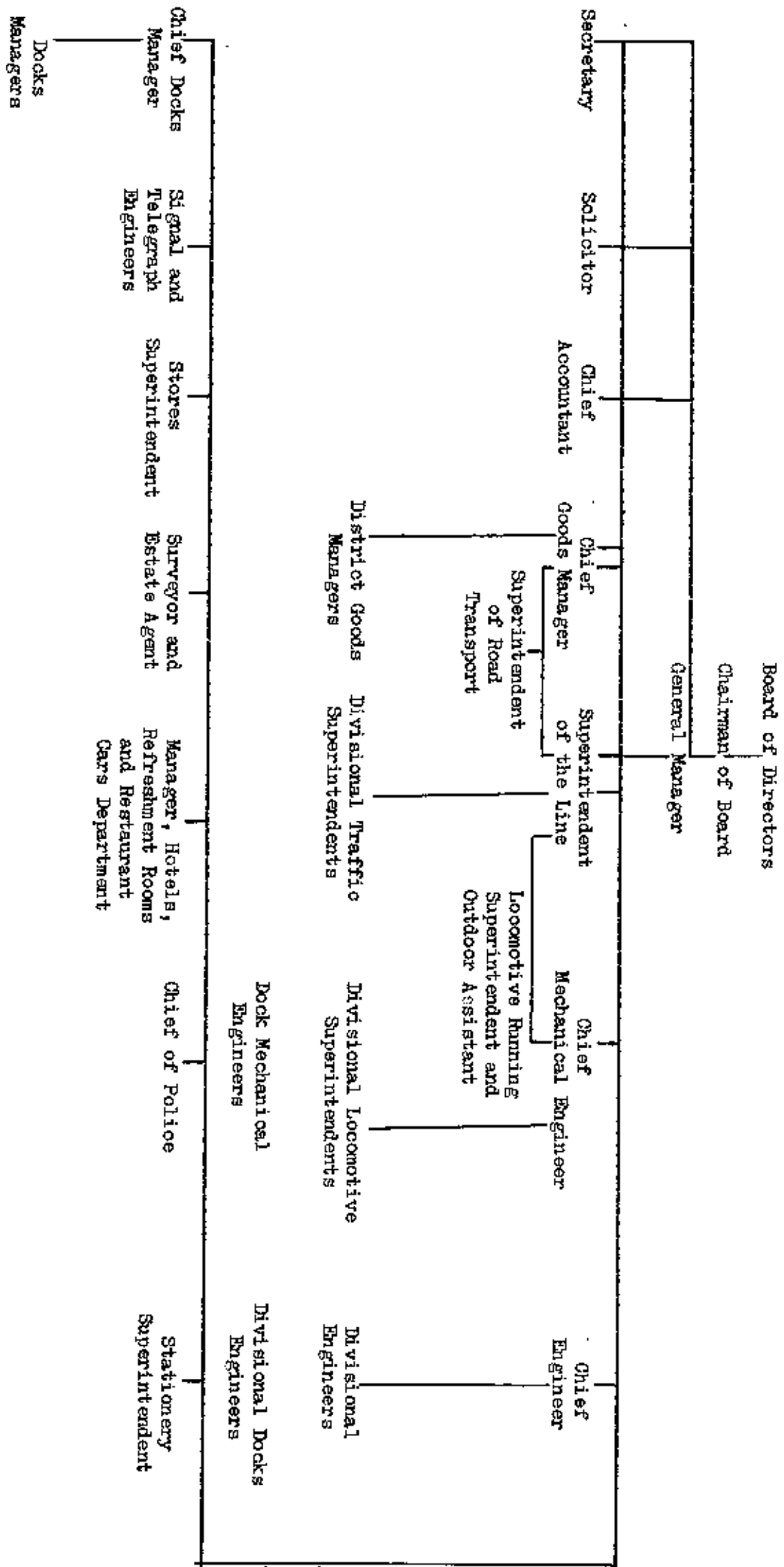
Until 1890 all trains passing through Swindon were compelled to stop for at least ten minutes so that passengers could use the refreshment rooms. Although the G.W.R. then bought themselves out of this inconvenient commitment, they still allowed other aspects of the company, notably the company structure, to remain stationary for far too long. It retained a strong departmental structure through the inter-war years, undergoing comparatively minor changes after the amalgamations of 1923. Given that the Company's overall strategy had not changed radically since the late nineteenth century, it is not surprising that there was no consequent re-structuring of the Company if one follows the strategy-structure

(1) thesis of A.D. Chandler. However, a further theme emerges from this inquiry, a theme which is not so much a contradiction of Chandler but which is instead perhaps the obverse of the same coin. For it has emerged repeatedly that inflexibility in the structure either of the administration or the operations of the Company as a whole severely restricted the opportunities to make strategic changes.

That the G.W.R. administration retained a rigid departmental structure is

(2) unremarkable when it is analysed as an example of 'The Machine Bureaucracy', as characterised by Henry Mintzberg. This type of structure is described as being the usual second stage of organisational development; it is the structure which an organisation adopts when it has become too big to be managed effectively by the original very personalised 'Simple Structure.'

- 
1. A.D. Chandler, Strategy and Structure: Chapters in the History of the Industrial Enterprise (Cambridge, Mass. 1962).
  2. H. Mintzberg, The Structuring of Organisations (New Jersey, 1979)



Source: Derived from C.E.R. Sherrington, Economics of Rail Transport in Great Britain Vol. II. (2nd ed. London 1937), 21.

Reproduced from G. Channon, 'The G.W.R. under the British Railways Act of 1921,' Business History Review, Volume IV, No 2, Summer 1981.

The British railway companies, being some of the earliest large industrial enterprises in the world, evolved steadily into this pattern during the nineteenth-century, but not just because this is a common 'early' stage of organisational development. There are good 'structural' reasons why a railway company should adopt this particular bureaucratic shape. It is a complex operation to keep train running both efficient and safe, involving the co-ordination of much widespread but inter-related manpower and machinery. It becomes essential that management can secure uniform standardised practices down to very small details to achieve this co-ordination throughout the company's entire operations. These operations need to be uniform and stable, and to achieve this the company seeks to

(3) establish a very thorough 'Standardisation of Work Processes.' Each and every operational task is strictly formalised by rules and regulations both in the manner of its execution and in the allocation of accountability should there be a failure. These "highly specialised, routine operating tasks, a proliferation of rules, regulations, and formalised communication throughout

(4) the organisation" are the fundamental features of the classic Machine Bureaucracy.

Mintzberg also indicates a number of consequences of adopting this kind of structure, evidence of which can be found in a British railway company such as the G.W.R. First, the emphasis on standardisation of work processes means that employees tend to be grouped by function, which forms the basis of the strong departmental structure of the company. This has already been indicated by Table 9 in the case of the G.W.R., but is also reflected in the development

(5) of most of the American railroads with the exception of the Pennsylvania and the Burlington. This in turn has further implications which are discussed below.

The second of the consequences indicated by Mintzberg is that, not only is there a strong distinction between line and staff, but also since the technocratic 'staff' (supposedly merely the advisors) are the source of the standardisation processes they emerge with considerable power in the structure. This is reflected by the continued dominance of the engineers

---

3. Ibid, p316-8

4. Ibid, p315

5. A.D. Chandler, The Visible Hand: The Managerial Revolution in American Business (Harvard, 1977) p 184



within the G.W.R. That these 'operating' men had considerable power within the Company is demonstrated by Churchward's (initially successful) attempt to implement a major programme of construction by his department. It was only by the device of commissioning an 'independent' report from the auditor Sir William Plender that Churchward's programme was modified, as described earlier (page 53).

The third consequence is that under such a departmental structure the strong divisions of labour persist to the very top of the organisation, and it is only at the very top that any general managers are found. This means that there are many minor matters of policy, or conflicts between departments, that cannot be dealt with in any other way than by referring them to the general management right at the top. In Mintzberg's words:

(6) "The managers at the strategic apex of these organisations are concerned in large part with the fine tuning of their bureaucratic machines .... Just keeping the structure together in the face of its conflicts also consumes a good deal of the energy of top management."

These obsessions with small details are repeatedly evident in the minutes of the Board of Directors, the official top decision-making body of the G.W.R. This left them little time and space to spend on long-term planning, or the consideration of strategic issues.

This leads to Mintzberg's final point, the 'Adaptation Problems at the Strategic Apex' of the Machine Bureaucracy. It is fundamentally a 'performance' not a 'problem-solving' organisation. It is a good structure for the

---

6. Mintzberg, The Structuring of Organisations p 321

(7) maintenance of routines in stable operating conditions, and under such stable conditions it is not a problem for the top general management to be heavily involved in the task of the 'fine tuning of their bureaucratic machines,' the resolution of day-to-day problems or conflicts presented by subordinates. But if operating conditions deteriorate, the managers' workload of routine problem-solving increases just at the time when they need to step back and plan long-term strategic changes to adapt to these new operating conditions. In Mintzberg's words, "Machine Bureaucracies are fundamentally non-adaptive structures, ill-suited to changing their strategies." As a Machine Bureaucracy, it would not therefore be surprising to find the G.W.R. in difficulties in implementing new strategies during the inter-war period - a period of deteriorating operating conditions.

Yet, as has been described in this inquiry, the G.W.R. did attempt to establish strategic changes or long-term policies in certain areas, though with varying degrees of success. In two of the cases cited, electrification and the stock construction programme, outside consultants became the vehicle for considering these proposed changes initially. But the G.W.R. also had a vehicle within the Company which was used in both the planning and monitoring of new strategies, and this was the Chief Officers' Conference.

For example, in the case of the G.W.R.'s own handling facilities for twenty-ton wagons, after the General Manager's announcement in October 1923 that it was intended that the Company should spend £2 millions on such facilities, it was the Chief Officers' Conference (the heads of the functional departments) which monitored the progress of this spending. For example in June 1925, it

---

7. Ibid, p 346

- (8) found "out of 41 appliances tabled for completion by the end of 1924, only 21 completed," and urged the moving on of the programme. A more striking example of its planning role, and a contrast with the Parkinsonian deliberations of the Board of Directors, is shown following the end of the First World War. The first meeting of the LCS Committee following the armistice immediately recommended that now was the time to catch up on the stock-building programme which had fallen behind during the war. Their
- (9) assessment was that 72 locomotives, 170 carriages, and 1500 wagons were required at a total cost of £555,000. The meeting of the Board of Directors the following day concerned itself with the transfer of individual named staff to salaried status, and with question of the superannuation status of other staff and the award of a number of gratuities. It was the Chief Officers' Conference which called together a special meeting to plan the stock-building programme, in February 1920, as described earlier (page 16). Within this otherwise strongly departmental organisation, the Chief Officers' Conference was the focus for much of the planning and monitoring of the Company's investment policies.

Therefore, although the structure of the organisation of the G.W.R. was generally unsuitable for planning new strategies in deteriorating operating conditions, the Company tackled this problem with some success and did find ways of planning and implementing new policies. But the problem they also tackled but were not able to overcome was the structure of the industry itself.

This is a distinction which Chandler does not explicitly make. Concentrating

- 
8. 'Mins of Chief Officers' Conference' 15 June 1925, RAIL 250/144 P.R.O.  
9. 'Mins of LCS Committee' 5 December 1918, RAIL 250/275, P.R.O.

on the theme of organisational development he seeks to show in 'Strategy and Structure' that the major changes in the structure of a company took place in response to that company adopting new strategies in its operations. In 'The Visible Hand' he demonstrates that enterprises increasingly adopted administrative co-ordination as the way to deal with new operational challenges. Since these organisational developments are the focus of his inquiries, he gives examples of different industries at different times as being in the forefront of these developments. For example, where the railroad companies between 1850 and 1880 were the first enterprises to establish, systematic administrative co-ordination, in the early twentieth century it was the Du Pont Company which was one of the front runners in developing the multi-divisional form. Chandler cogently argues why different kinds of enterprise rose to the fore in organisational development at different times, but it is therefore not a part of his inquiry to show what happened to those businesses which had passed their 'time'. Because by definition Chandler does not (in these books) deal with an industry in real decay he never has to make explicit the distinction between the restrictions imposed by company structure and those imposed by the structure of the industry.

Yet between the wars the G.W.R. was exactly in this position of steady decline, and in this respect shared the experience of the railway industry both sides of the Atlantic. Although it was a business well past its 'time' as a progressive organisation, it has been argued here that real efforts were made to overcome the restrictions imposed by the company structure in order to tackle fundamental investment decisions. It in fact compares favourably with the Pennsylvania Railroad, a beacon of progressive organisation in the 1870's, whose decline in the twentieth century has been examined by a disciple of

(10) Chandler, Stephen Salsbury. His general finding that the Company became dominated by 'operating' men promoted in accordance with seniority is strongly echoed in the G.W.R., but in a number of practices the G.W.R. emerges more favourably. Where Salsbury found in the Pennsylvania no attempt at all at cost accounting before the 1950's, the G.W.R. has been shown to have attempted this in locomotive repairs in the 1920's even though they did not follow the idea through properly (pages 50-1). Again, where Salsbury points to the Pennsylvania's lack of forward planning to meet future needs for capital improvements, it has been shown here that genuine forward planning was realistically attempted by the G.W.R. in each of the three strategic decisions examined.

Nevertheless there were shortcomings and failures in the G.W.R.'s attempts to plan strategic changes. Some of these arose from its own organisational shortcomings, for example the statistical section's confinement to one department (page 51) prevented its use as a tool of general management to assess operational costs on a wider scale. Some of the failures arose from the inconsistent behaviour of government, as with electrification (page 28). But it was the structure of the industry itself which posed an even more intractable problem, as has been discussed in general terms (page 22), and in particular in relation to mineral wagons (page 47) where a fatal interdependence with small colliery owners put the G.W.R. in an impossible position.

It therefore appears useful to draw a distinction between the structure of

---

10. S.M. Salsbury, 'Twentieth Century Railroad Managerial Practices: The Case of the Pennsylvania Railroad' in R.E. Gallman (ed) Recent Developments in the Study of Business and Economic History: Essays in memory of Herman E Krooss (Greenwich, Conn, 1977) Also S.M. Salsbury, No Way to Run a Railroad: The Untold Story of the Penn Central crisis. (New York, 1982).

the company organisation and the structure of the industry in which it operates. This becomes particularly relevant where the industry is in decline, and where therefore both issues need to be tackled in order to arrest that decline. The G.W.R. did attempt to tackle these issues, and with a measure of success in the first area, but were overcome by the problems of the second area. Where Chandler demonstrated that in an expanding industry structure will adapt and develop as a consequence of new strategies, the Great Western Railway discovered that in a declining industry structure will restrict the opportunity to develop new strategies.

Primary sources

Swindon Evening Advertiser, Swindon Reference Library

Great Western Railway Magazine, Swindon Reference Library

'Minutes of Great Western Railway Board', RAIL 250/53-4, Public Record Office

'Minutes of Chief Officers' Conference', RAIL 250/143-4, P.R.O.

'Minutes of the Locomotive, Carriage and Stores Committee', RAIL 250/275, P.R.O.

'General Manager's Report to the Traffic Committee', RAIL 250/450, P.R.O.

'Report by General Manager on statistics compiled by Chief Mechanical Engineer's Department at Swindon', 1927, RAIL 253/390, P.R.O.

'Docks Department Reports', RAIL 253/431-4, P.R.O.

'Goods Department Reports', RAIL 253/431-4, P.R.O.

'Traffic Department Reports', RAIL 253/431-4, P.R.O.

'G.W.R. Secretarial papers: Electrification of Taunton to Penzance section', RAIL 258/274, P.R.O.

'Annual Reports of the Chief Mechanical Engineer', RAIL 258/304, P.R.O.

'G.W.R. Secretarial papers: Electrification of London to Reading section', RAIL 258/451, P.R.O.

'Report of the Sub-committee of Economies Consequent upon Amalgamation', 1923, RAIL 258/453, P.R.O.

'G.W.R. Secretarial papers: Pooling of mineral wagons', RAIL 258/460, P.R.O.

'Report of the Standing Committee on Mineral Transport', 1929, RAIL 1053/343/P.R.O.

'Annual Reports and Accounts', RAIL 1110/197, P.R.O.

'Report of the Royal Commission on the Coal Industry', RAIL 1119/122, P.R.O.

Also miscellaneous papers found under RAIL 253/264, RAIL 253/305, and RAIL 253/499, P.R.O.

BIBLIOGRAPHY

Secondary sources

- D.H. Aldcroft, British Railways in Transition (1968)
- P.S. Bagwell, The Transport Revolution from 1770 (1974)
- T.C. Barker and C.I. Savage, An Economic History of Transport in Britain (1974)
- M.R. Bonavia, Railway Policy Between the Wars (Manchester, 1981)
- A.D. Chandler, Strategy and Structure: Chapters in the History of the Industrial Enterprise (Cambridge, Mass. 1962)
- A.D. Chandler, The Visible Hand: The Managerial Revolution in American Business (Harvard, 1977)
- G. Channon, 'The G.W.R. under the British Railways Act of 1921,' Business History Review, Volume LV, Number 2 (Summer 1981)
- C.H. Feinstein, Domestic Capital Formation in the U.K., 1920-38 (1965)
- R.E. Gallman (ed.) Recent Developments in the Study of Business and Economic History: Essays in Memory of Herman E. Krooss (Greenwich, Conn. 1977)
- Leslie Hannah, Electricity before Nationalisation (1979)
- H. Mintzberg, The Structuring of Organisations (New Jersey, 1979)
- O.S. Nock, History of the Great Western Railway Volume III (1967)
- Alan Peck, The Great Western at Swindon Works, (Poole, 1983)
- M.C. Reed (ed.) Railways in the Victorian Economy, 1969
- S.M. Salisbury, No Way to Run a Railroad: The Untold Story of the Penn Central crisis (New York, 1982)
- W. Smith, An Economic Geography of Great Britain (2nd edition, 1953)