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CRAFT UNIONISM AND INDUSTRIAL CHANGE:
A STUDY OF THE NATIONAL UNION OF VEHICLE BUILDERS UNTIL 1939.

IN TWO VOLUMES.

VOLUME ONE.

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SUMMARY

This thesis is about how the members of a long-established multi-craft union, originating in the coachmaking trade, coped with the massive changes in the means of transport, culminating in the dominance of mass production motor car firms. Part I explores changes in the nineteenth and early twentieth century with the rise of railways and motor cars. In both, some coachmaking skills were made redundant, while others were very necessary. The rise of the motor industry, far from destroying coachmaking unionism, wrenched it out of a long period of stagnation.

Part II focusses on the interwar period, which witnessed major changes in car body production. Brush painting and varnishing was replaced by cellulose spraying; wooden framed bodies were replaced by all-steel ones; assembly lines came into use, and the division of labour greatly increased, with large numbers of semi-skilled workers employed in the biggest firms. Analysis of the main technical changes, and the changing state of the car industry, shows that, despite massive unemployment among its members, and a membership decline of over one third, in the early 1930s, the NUVB did not suffer "technological unemployment".

Although there was a material basis for craft unionism in much of the car body industry in the 1920s, and in the rest of vehicle building during the whole interwar period, the union still tried to organise semi-skilled workers. But when an "Industrial Section" was created in 1931, it was a response to the union's financial crisis caused by unemployment payments, and no serious recruitment of mass production operatives took place. The contrasting experiences in Coventry and Oxford in the 1920s and 1930s are analysed in detail.

The study is not a conventional head office-based union history, instead favouring case studies of the organisation of work, technical developments, industrial structure, and local union organisation.

FOR MARY,

FOR PUTTING UP WITH ME AND THIS.

CONTENTS.

List of Abbreviations.

List of Tables.

INTRODUCTION.		page 1
	PART I - BEFORE THE FIRST WORLD WAR.	32
CHAPTER 1.	EARLY COACHMAKING TRADE UNIONISM.	33
	A. Introduction - The Coachmaking Industry.	33
	B. Coachmaking Trade Unionism, 1700-1850.	37
	C. Local and Sectional Coachmaking Societies.	53
	D. The 1879 Crisis.	62
CHAPTER 2.	THE COACHMAKING TRADE.	69
	A. Early Coaches and Coachmakers.	69
	B. The Wood and Iron Trades.	76
	C. The Painters.	98
	D. Piecemasters.	114
CHAPTER 3.	RAILWAY CARRIAGE BUILDING.	132
	A. Early Railway Carriages.	132
	B. Nineteenth Century Railway Carriage Builders.	139
	C. The UKSC and Railway Shops.	150
	D. The Challenge of the GRWU.	162
CHAPTER 4.	THE EARLY MOTOR CAR INDUSTRY.	172
	A. The Horseless Carriage.	172
	B. New Skills and Old.	180
	C. Union Activity in the Early Motor Car Industry.	196
	D. The Demise of the Piecemaster System.	216

	PART II - THE INTERWAR YEARS.	226
	Introduction.	227
CHAPTER 5.	VEHICLE BUILDING BETWEEN THE WARS.	230
	1. Carmakers and Coachbuilders:	230
	Introduction.	230
	A. Coachbuilders' Work for Car Manufacturers.	234
	B. Division of Labour and the Assembly Line.	252
	2. Railways:	281
	A. Rationalisation and Employment.	281
	B. Developments in Railway Carriage Building Practice.	292
	3. Buses and Trams:	303
	A. Bus and Coach Builders.	303
	B. Provincial Bus Operators.	308
	C. London Buses.	313
	D. Tram Operators.	321
CHAPTER 6.	TECHNICAL CHANGE - PAINTING AND THE ALL-METAL BODY.	328
	1. The Painting Revolution:	328
	A. From Paint Brush to Cellulose Spray.	328
	B. Impact of Cellulose on the NUVB.	345
	C. Spray Painting outside of the Car Industry.	363
	2. The All-Metal Body:	369
	Introduction.	369
	A. The All-Metal Car.	370
	B. The All-Metal Bus Body.	390
	C. The All-Steel Railway Carriage.	409
	D. Post-War Developments.	418
CHAPTER 7.	ORGANISATIONAL CHANGE IN THE NUVB.	431
	1. The 1920s - The NUVB and the Semi-skilled:	431
	A. Semi-skilled membership and the union's rule book.	431
	B. Grading of Labour in the Engineering Industry.	438

C. Female Labour.	454
D. The search for an organising policy in the car industry 1926-1930.	464
2. The 1930s - Financial Crisis and Organisational Change:	479
Introduction.	479
A. Financial Crisis.	480
B. The Industrial Section.	492
C. Superannuation Benefit.	517
D. Membership Loss.	528
 CHAPTER 8. THE NUVB IN THE CAR FACTORIES.	 549
Introduction.	549
1. Coventry:	552
A. Coventry in the 1920s.	552
B. Coventry in the 1930s.	585
2. The Mass Producers:	619
A. Morris Motors in the 1920s.	619
B. The Pressed Steel Company.	631
C. Austin, Vauxhall and Ford.	646
 CONCLUSION.	 661
 APPENDICES:	 704
1. The Nineteenth Century Railway Company Workshops.	704
2. Railway Workshop Union Membership Statistics.	719
3. Census Returns, 1921/1931.	723
4. Coachbuilding Employer Organisations and National Agreements.	729
5. Big Six Car Production, 1929-1939.	736
6. The Smaller Car Producers.	740
7. NUVB Car Branch Membership, 1919-1939.	748
8. NUVB Industrial Action in Coventry, 1919-1929.	751
9. The 1934 Pressed Steel Strike.	764

NOTES AND REFERENCES:	767
Introduction.	768
Chapter 1.	770
Chapter 2.	777
Chapter 3.	787
Chapter 4.	794
Part II Introduction.	803
Chapter 5.	804
Chapter 6.	819
Chapter 7.	835
Chapter 8.	850
Conclusion.	869
Appendix 1.	871
Appendix 2	874
Appendix 4.	874
Appendix 5.	875
Appendix 6.	876
Appendix 8.	879
Appendix 9.	881
 BIBLIOGRAPHY.	 882

ABBREVIATIONS USED IN THE TEXT AND NOTES

AEU	Amalgamated Engineering Union
ASCJ	Amalgamated Society of Carpenters and Joiners
ASE	Amalgamated Society of Engineers
ASLEF	Associated Society of Locomotive Engineers and Firemen
ASRS	Amalgamated Society of Railway Servants
ASW	Amalgamated Society of Woodworkers
ASWM	Amalgamated Society of Woodcutting Machinists
AWSKTU	Amalgamated Wheelwrights, Smiths and Kindred Trades Union
BET	British Electric Traction
BOC	British Oxygen Company
CDEEA	Coventry & District Engineering Employers' Association
CP	Communist Party
CWS	Cooperative Wholesale Society
EAENF	Engineering and Allied Employers' National Federation
E&NEF	Engineering and National Employers' Federation
EEF	Engineering Employers' Federation
ETU	Electrical Trades Union
FEST	Federation of Engineering and Shipbuilding Trades
GFTU	General Federation of Trade Unions
GJR	Grand Junction Railway
GM	General Motors
GRWU	General Railway Workers Union
GWR	Great Western Railway
GUCJ	General Union of Carpenters and Joiners
IS	Industrial Section
JIC	Joint Industrial Council
L&B	London & Birmingham [Railway]
L&M	Liverpool & Manchester [Railway]
L&Y	Lancashire & Yorkshire [Railway]
LBSCR	London, Brighton & South Coast Railway
LCC	London County Council
LCTU	London Coachmakers Trade Union
LGOC	London General Omnibus Company

LMS	London, Midland & Scottish [Railway]
LNER	London & North Eastern Railway
LNWR	London & North Western Railway
LPCTU	London & Provincial Coachmakers Trade Union
LPTB	London Passenger Transport Board
LUT	London United Tramways
M&B	Manchester & Birmingham [Railway]
MET	Metropolitan Electric Tramways
MS&L	Manchester, Sheffield & Lincolnshire [Railway]
NAFTA	National Amalgamated Furniture Trades Association
NBR	North British Railway
NEAVB	National Employers Association of Vehicle Builders
NER	North Eastern Railway
NFVT	National Federation of Vehicle Trades
NUGW	National Union of General Workers
NUR	National Union of Railwaymen
NUVB	National Union of Vehicle Builders
PEP	Political and Economic Planning
PP	Parliamentary Papers
S,A&M	Sheffield, Ashton-under-Lyne & Manchester [Railway]
SEF	Shipbuilding Employers' Federation
SMET	South Metropolitan Electric Tramways
SMMT	Society of Motor Manufacturers and Traders
SMT	Scottish Motor Traction
SNVBA	Scottish National Vehicle Builders Association
STUC	Scottish Trades Union Congress
SVBA	Scottish Vehicle Builders Association
TA	Typographical Association
TGWU	Transport and General Workers Union
TUC	Trades Union Congress
UDC	Urban District Council
UKJWB	United Kingdom Joint Wages Board for the Vehicle Building Industry
UKSC	United Kingdom Society of Coachmakers
WCOU	Wheelwrights and Coachmakers Operatives Union
WU	Workers' Union

LIST OF TABLES

1:1	Number of carriages in use, 1814-1874.	page 34
1:2	Adult male coachmakers, England and Wales, 1831-1871.	34
1:3	Adult male coachmakers in London, 1841-1871.	57
2:1	Breakdown by trade of UKSC membership, 1860.	73
2:2	Breakdown of coachmaking trade by occupation, 1877-1883.	75
2:3	Approximate Journeyman/Apprentice Ratio for Coachmaking in London and the Rest of England and Wales, 1841-1871.	94
2:4	Hours sandpapering per day by grade of paint shop labour, 1911.	109
2:5	Lead poisoning in coachbuilding, 1899-1914.	113
2:6	Average age at death in different UKSC trades, 1892-1910.	113
2:7	Piecemasters and their mates in a London firm, 1893.	126
3:1	GRWU selected shopmen branch membership, 1908.	164
3:2	GRWU membership, 1910-1912.	167
4:1	Proportion of horse-drawn traffic, London, 1911-1913.	173
4:2	Annual production levels for 3 motor car firms up to 1914.	179
4:3	Types of motor vehicle wheel used, 1915.	184
4:4	UKSC membership in certain car industry areas, 1900-1914.	197
4:5	Trade union breakdown of coachbuilding employees at a number of Coventry firms, June 1913.	206
5:1	Annual production figures, Morris, Austin, Rover, Vauxhall, 1919-1929.	231
5:2	Estimated "Big Six" car production, 1929-1939.	232
5:3	Total car and car body production, 1930-1937.	234
5:4	Employment in body building firms, 1924-1935.	235
5:5	Austin Seven body sourcing, 1928-1932.	238

5:6	Standard Motors body and chassis production, 1931/32 - 1932/33.	243
5:7	Public tram undertakings in London, 1914, with numbers of tramcars.	326
5:8	Tramcars and trolleybuses operating in London, 1914-1940.	327
6:1	Rolls-Royce costing of alternative metal bodies.	386
7:1	Total semi-skilled (over 35?) membership, 1921-1931.	437
7:2	NUVB unemployment benefit payments, Jan.1926-Jul.1927.	482
7:3	NUVB unemployment, Nov.1930-Nov.1934.	491
7:4	Industrial Section membership, 1932-1938.	495
7:5	Recruitment of over-35 year olds into different contribution tables, Oct.1935-Oct.1937.	499
7:6	Industrial Section, and total NUVB, recruitment, 1937.	501
7:7	Geographical location of Industrial Section membership, 1935-1938.	502
7:8	Industrial Section membership in selected car industry branches, 1935-1938.	505
7:9	Swindon branch Industrial Section membership, 1935-1938.	513
7:10	Semi-skilled and Industrial Section membership of particular branches, 1931-1935.	515
7:11	Quarterly recruitment of under-35 year olds, 1930-1937.	516
7:12	NUVB membership decline, 1930-1934.	529
7:13	Membership loss in selected Midlands branches, 1930-1933.	530
7:14	Membership loss in selected railway town branches, 1930-1933.	531
7:15	Membership loss, Unemployment, Contributions, and Benefits, Jan.1931-Jul.1933.	542
8:1	Coventry federated firms' coachbuilding employment, 1924-1925.	553
8:2	Coventry non-federated firms' coachbuilding employment, 1925.	553
8:3	Coventry federated firms' grading of adult male labour, 1924.	556
8:4	Coventry NUVB membership loss and unemployment, 1930-1934.	587
8:5	Morris Motors chassis monthly production figures, 1920-1922.	630

A2:1	GRWU membership in coachmaking areas at York, March 1913.	719
A2:2	GRWU membership in coachmaking areas in selected workshops, March 1913.	720
A2:3	GRWU/NUR selected workshop branch membership, 1910-1919.	721
A2:4	UKSC/NUVB branch membership in selected railway towns, 1910-1919.	722
A3:1	1921 Census - England & Wales - Males - All Ages.	724
A3:2	1931 Census - England & Wales - Males - All Ages.	726
A3:3	1921 Census returns of unskilled male car and cycle workers.	728
A3:4	Women in vehicle building, 1921 and 1931.	728
A4:1	Prominent NFVT member firms, 1915-1943.	730
A5:1	Estimated Big Six car production, 1929-1939.	736
A7:1	NUVB selected car branch membership, 1919-1939.	748

INTRODUCTION

A. WHY THIS SUBJECT.

The National Union of Vehicle Builders organised, until 1972, tens of thousands of workers in British car factories. Its merger into the TGWU gave that union the predominant position in the motor industry it has enjoyed ever since. During the 138 years of the independent existence of the NUVB and its main predecessor union, the United Kingdom Society of Coachmakers, profound changes took place in the types of vehicle built and the manner in which they were built.

This thesis is about those changes, and how union members collectively, both through their official institutions and at the place of work, sought to cope with them. Consequently, it is not a conventional narrative trade union history; neither does it cover the whole period of the union's existence. While some developments are traced through past 1945, the period covered by the thesis ends in 1939. By then the decisive changes had taken place in both the motor industry - mass production, oligopoly, assembly lines, steel bodies, integral (ie chassis-less) construction, and spray painting; and also in the interested unions, with the NUVB's and AEU's formal commitment to "open" unionism, and the TGWU's irreversible encroachment into the NUVB's newly expanded "job territory".

While the bulk of the thesis concentrates on the interwar years, a significant section is devoted to the years before 1914, also a period of change, but of a less dramatic nature. The emphasis of the study is on the motor industry, but NUVB members also worked in other vehicle building sectors, in many districts being mobile between them; these sectors are examined because the total experience, complex and uneven, affected the attitudes of members and officials to developments in the more rapidly changing motor industry. One result of this emphasis is that the history of industrial and technical change in those industrial sectors employing vehicle builders had to be discovered. The thesis is therefore, as its title implies, also a history of industrial change.

As with many pieces of research, there has been a shift of emphasis from the original conception. When I first formulated the research proposal, it had been my intention to study the union up to and beyond the 1972 merger with the TGWU. The questions I wanted to answer generally covered the post-1945 period. The concerns for the earlier years revolved around the impact of the tremendous technical changes on the union, and the extent to which the craft heritage of the union sustained or hindered trade unionism in the interwar motor industry.

The "opening" out of the union, very partially in 1919, and then fully in 1931, appeared relatively non-controversial. It was surely a classic case of Turner's argument that "the most obvious cause of such a transformation in a closed union's character is a technical change which undermines the permanence or blurs the identity of its members' occupation". In fact, Turner even cited the NUVB as an example,

referring to the "violent" technical revolution of mass production that confronted the NUVB in the 1920s, causing it to "open its ranks" to mass production operatives.²

The evidence seemed straightforward. Allen, for example, wrote in the mid-1930s "a few years ago the bodies of cars were painted by skilled workers", but "new types of paint can be sprayed on to the bodies with a gun, and so the need for skilled workers no longer exists".³ Similarly, the rise of all-steel bodies, dating from the establishment of the Pressed Steel Company in 1926, eliminated the woodworking skills necessary in traditional wooden-framed bodies. From the beginning of the 1930s, car production was rapidly concentrated in the "Big Six" mass producers. As "proof" of the cumulative impact of these changes, there was the NUVB's own predicament - in the 2½ years from the beginning of 1931 its membership fell by one third, from roughly 29,000 to 19,500 (at a time when total union membership only fell by about 10%⁴); and, during this period, between 4,000 and 6,000 of the union's members were unemployed at any one time. Total numbers employed in the car industry had contracted sharply in 1929-31, but increased again from 1931 onwards.⁵ Here was an obvious case of what could be called "technological unemployment", the exact features of which merely needed to be recorded. (Since this research started, a number of authors have also made similar assumptions when referring to the NUVB in the interwar years.)

But a closer study revealed that this explanation did not hold up. The decision to open an "Industrial Section" in 1931 was motivated

primarily by other factors; it was an attempt at the time to reduce the inflow of members who would be able to claim union unemployment benefit. The membership loss of the early 1930s was largely a reaction of employed members to the regime of increased subscriptions and reduced benefits necessitated by the exceptionally heavy burden of supporting unemployed members. The high unemployment itself was only marginally "technological" and mainly caused by the general depression of economic activity in the various vehicle building sectors.

From being a relatively non-controversial period, the interwar years became the central focus of the thesis, generating a number of empirical questions that needed answering. What technical changes actually took place in the motor industry, when did they take place, and how universal were they? How dominant were the mass producers? How significant were the coachbuilding firms supplying the motor industry? Did the same technical developments affect vehicle building outside the motor industry? More specifically, on the union: how did it organise or attempt to organise in the motor car factories? Did the establishment of the Industrial Section make any difference to its organising policy in the industry in the 1930s?

Further, the experiences of the 1920s and 1930s were not totally unprecedented. Railway carriages had been built using machinery for decades. Some of the railway company workshops were huge factories already in the nineteenth century, employing several thousand people. All the craft unions had been affected by the massive growth of the NUR in the workshops around the beginning of the first world war. Important

changes also occurred in the motor industry prior to the rise of mass production. To situate the interwar developments in their context it was necessary to study the nineteenth century and the pre-first world war era.

Any historical case study inevitably raises a number of more general questions thrown up by the research findings. This thesis is no exception. The most obvious, given the emphasis of this study, relate to technical change and the changing nature of "skill". But there are other, more neglected, areas, such as the significance of a union's financial situation as a determinant of policy, and the role of the state in sustaining trade unionism. Such questions will be considered in the conclusion.

B. HISTORIANS AND THE NUVB

When the research for this thesis started in 1979, there was very little published information on the union or its predecessors. That situation has improved in the interim, as interest in the development of motor industry trade unionism was awakened during the 1970s, and further material should be published in the next few years. Unfortunately, most of the limited comments concerning the NUVB in the literature to date have been misleading or simply inaccurate.

Taking the coachmaking unions first, Thompson's reference to the conviction under the Combination Acts of the General Secretary and others of the Benevolent Society of Coachmakers does not make it clear

the Society was destroyed by this legal action.⁶ Cole inaccurately claimed that in the third quarter of the nineteenth century "The coachmakers had a strong Union, chiefly in London", when London was their weakest area.⁷ The Webbs' main use of the UKSC was as part of the evidence for their reconstruction of the movement of unions away from the stage of "primitive democracy"; but this has been shown elsewhere by the author to have imposed a time sequence on the UKSC's governmental changes that is not borne out by the actual dates.⁸ A similar problem encompasses the trade itself. An 1837 publication was the source for a description of the status and earnings hierarchy of the different branches of the trade, cited by Hobsbawm and Thompson⁹; but Burnett, using it, wrongly assumed that workers "might move up the hierarchy - from trimmer to carriage-maker to body-maker",¹⁰ whereas these constituted separate trades in their own right.

The major reason for such errors in the secondary literature relates to the near-absence of published material on coachmaking unions, and the relative inaccessibility of material on the trade. The NUVB's own centenary history in 1934,¹¹ written by a union official, is unfortunately of very little use; and while a much better account of the early days of the UKSC was produced earlier,¹² very few copies probably ever went beyond union circles. The excellent 1837 book on coachmaking by Adams was reprinted in 1971, but most other material is confined to a small number of libraries, where research can also be frustrated by incomplete runs of the various nineteenth century journals of coachbuilding and related trades.

Similar difficulties exist for the interwar years. While there is an extensive technical periodical literature, and primary union and employer materials, very little secondary literature has been published. In particular, a great injustice has been done to the union by the generally accepted account of its role in the General Strike. Phillips, for example, argues that "some local branches of the AEU and the Vehicle Builders, particularly in the midland car industry, took action unofficially" and refers to these stoppages as "unauthorised", though put on "a legal footing" when the "second wave" of strikes encompassed engineering.¹³ However, a fierce debate took place inside the NUVB executive on Monday May 3rd 1926 as to whether the union should come out in the "first wave" of strikers which included transport workers. It was eventually decided by 7 votes to 6 that "all our members other than those engaged on making and repairing vehicles used in Distribution of Food and Sanitation must cease work immediately", and telegrams were sent out.¹⁴ Organisers' reports and benefit payments suggest that around 90% or more of the union's membership were out from the first Tuesday, with major consequences for the strength of the union's future finances.

Apart from mentions in a number of standard accounts of trade union institutional practices of the post-1945 era, the only recognition, until very recently, of the NUVB's role in the motor industry, was in Turner, Clack & Roberts's classic study.¹⁵ The NUVB's existence has been acknowledged in the 1980s, but all too often with conclusions based on insufficient research. This has especially been the case with the supposed effect of technical changes on the NUVB's membership. For example, Whiting has claimed that in the interwar car industry "the use

of car bodies made up in metal sections with a timber frame, instead of those made entirely with wood, reduced many of the requirements for skilled woodworking and hit the NUVB membership hard".¹⁶ Yet metal-panelled, wooden-framed, cars were the norm well before the first world war, and members of the NUVB's predecessor unions were usually engaged in fixing the metal panels on the frame.

Whiting has also argued that the NUVB in Coventry were "on the defensive in the later 1920s" and were "unable to stop the introduction of new machinery". Their 1931 branch membership had halved by 1935, and this was implicitly blamed on "efforts to 'dilute' skilled body-building labour" which "continued into the 1930s".¹⁷ Thoms and Donnelly have similarly declared that the Coventry NUVB were "in retreat for much of the 1920s as employers sought to enforce dilution and adopt new systems of manufacture".¹⁸ Yet the research for this thesis shows that the NUVB were in a relatively strong position in Coventry throughout the 1920s; the one universal technical change of the 1920s' motor industry - the cellulose spray - does not appear to have displaced many, if any, members. The decline in Coventry in the early 1930s was part of the dramatic national membership decline; while it took place at a time of important changes in the motor industry generally, there was no direct immediate link, such as technological unemployment, which is the suggestion of the above writers.

The size and importance of the coachbuilding sector in the interwar motor industry has also been consistently ignored by academic writers on the industry,¹⁹ though not by motoring historians. Attention has

traditionally been concentrated on the mass production car manufacturers, but even here there are significant oversights. In particular, while many writers have recorded the existence of the Morris Bodies factory in Coventry,²⁰ it has never been considered important. Whiting argues that Morris "had purchased supply firms in Coventry" but "had as little trouble there as in Cowley", and, again, he "was as untroubled in Coventry as in Cowley by labour organisation".²¹ This account appears to be based on the Morris Engines factory, whereas Morris Bodies (formerly Hollick & Pratt) formed the largest single block of NUVB members in Coventry in the mid-1920s, and experienced a number of strikes later in the decade (see chapter 8).

In fact, Friedman, using the Ministry of Labour Gazette, has claimed that no strikes were recorded for the Coventry motor industry until 1934.²² This is no doubt true, but its significance does not appear to have been challenged. The Gazette only gave details of what it called "Principal Trade Disputes"; Whiting has since found that 118 strikes were recorded for the whole motor industry, including Coventry, in the years 1921-38.²³ Yet not only do the official statistics, by definition, exclude certain small strikes, they also under-record those eligible for inclusion, as well as ignoring other forms of industrial action. In the 1970s this meant a serious underestimation of the number of incidents of industrial action.²⁴ While there was undoubtedly much less of this unrecorded action in the interwar years, this thesis produces evidence for a minimum of about forty incidents involving NUVB members in Coventry in the years 1919-1929, which challenges Friedman's conclusion

of "the weakness of collective worker resistance" in Coventry at this time.²⁵

On probably the first occasion the NUVB's national agreements have been discussed, the separate agreements with the EEF and the UKJWB were muddled together, though fortunately with no consequences for the ensuing argument.²⁶ Finally, it is necessary to note a very recent article by Tolliday on the interwar motor industry,²⁷ which, I believe, correctly concludes that "the existing unions can be criticised for tactical and strategic failures and for not making better use of opportunities for growth that did exist within their potential frames of reference.But the mass unionisation of semi-skilled workers in new industries was a task in a different league from that of routine trades unionism". However, Tolliday makes a number of factual and interpretative errors in his section on the NUVB, which cumulatively give a very distorted view of that union.

To start with, he claims the NUVB was an amalgamation of woodworking craft societies, and that its "core" was in the woodworking trades, an assumption, challenged in this thesis, which allows him to claim, that, in common with other unions, the NUVB's "motor membership was on the periphery of their vision". Noting correctly that their membership held up in Coventry in the 1920s, he argues that they were not locked out in 1922 (despite the current author's already published claim that they were²⁸). While recognising the importance of the union's own financial crisis in its membership decline of the early 1930s, Tolliday incorrectly states that, as unemployment rose, the NUVB "sought to ...

pay out relatively high levels of unemployment benefits to members". In fact, the union cut its unemployment benefit in half in May 1931, and then again in September 1932. He further asserts "they were squeezed by the collapse of high-class work at the bottom of the depression in 1931-33 and the simultaneous rise of new techniques such as all-steel bodies and cellulose spray painting which eliminated many of their crafts". While "high-class" work declined, it was only part of a more general problem of unemployment in the vehicle building industries at the time. More importantly, Tolliday appears to be subscribing to the "technological unemployment" thesis noted above, whereas the actual situation was significantly more complex.

The NUVB is specifically accused of having "refused to recruit the striking female trimmers" at Rover in 1930, despite Tolliday's own earlier recognition that the union's rules did not empower this at the time, and that these were changed "in the aftermath of the Rover strike".²⁹ Further, the union is more generally indicted for rejecting "potential members" in a number of disputes in the early 1930s, but no evidence is given for this, as it probably does not exist.

A myth is also created about the union to portray it as being incontrovertibly stuck in nineteenth century craft union methods. The NUVB "concentrated on traditional but increasingly ineffective forms of craft control. For instance, when firms like Armstrong Siddeley or Harper Bean refused to pay NUVB rates in the early 1930s, the NUVB withdrew their members from the firms and instructed their members to 'black' them. They were quickly replaced by non-unionists and the NUVB

were excluded from the shops." This account is very misleading. Harper Bean, it is true, was blacked for about a year following a long strike in 1925 (not the 1930s),³⁰ but this was a very unusual step by this time; Armstrong-Siddeley was not, and the reasons for the union's decline in the factory, following the 1931 strike there, are investigated in chapter 8.

There can be no doubt that the NUVB's craft heritage coloured the general response of its officers and members to interwar developments in the motor industry, so there is no need to misrepresent their actions to prove that point. Carr has noted that not only has the historian an "obligation to see that his facts are accurate", but also that "he must seek to bring into the picture all known or knowable facts relevant, in one sense or another, to the theme on which he is engaged and to the interpretation proposed."³¹ Historians of the motor industry and its trade unions have sometimes failed the first obligation because of a more general failure with the second. Hopefully, this thesis will establish a sufficient body of facts on the NUVB to make it less likely that similar errors of fact and interpretation to those analysed in the last few pages will continue to be made.

Of course, in those areas where I have myself relied on secondary sources or limited primary material, I have no doubt sometimes perpetrated similar mistakes. This is an inevitable feature of any piece of historical writing, and can only be minimised by making as much as possible of the central interpretation reliant on a variety of primary sources. The next section deals with the use of sources.

C. METHODS AND SOURCES

As noted already, this thesis is not a conventional trade union history, but it does make extensive use of union records. Any attempt to break away from the more traditional history must take into account the deficiencies of that genre.

Problems of Trade Union History

Musson has accurately, if somewhat brutally, observed that "Many trade union histories, particularly older ones, are merely hotchpot collections of random snippets from voluminous records". Such works, based essentially on chronological narrative, clearly "do not provide a thorough and penetrating analysis". Yet it is doubtful whether they even match up to Musson's claim that "only such popular presentations are likely to interest the average trade union reader".³² Trade union histories are among the great unread books of our time, whatever their projected audience. Despite Hobsbawm's belief that only a few trade union histories were still being written "in the old way" by 1974,³³ it is still the case, as Hobsbawm himself noted in 1964, that "jubilee and souvenir volumes or pamphlets" are "mainly written by elderly officials or sympathetic publicists with a very much greater sense of union piety and retrospective self-satisfaction than scholarly competence or critical sense".³⁴

Even the more academic histories of trade unions suffer from similar problems to their "popular" counterparts. Price identifies the "greatest" fault in most accounts of trade unions as "the failure to place the rise of labour within any other perspective than its own heroic boundaries"; with the further criticism that "mainstream, traditional" labour historiography treats "labour's rise to prominence" as "a natural, progressive evolution".³⁵

Samuel has partially explained the reason for the persistence of this approach. "Organisations can swallow the historian up if he approaches their records unwarily, because they offer a ready-made subject for research, with all the materials perhaps to hand". In the case of trade unions, the documents are "chiefly" executive minute books; the subject is defined in a "teleological" way - "the origin and growth of national organisation"; the perspective is from head office, with the rank and file appearing in the records "only as troublemakers, or seceders, or members in arrears". Consequently, "the researcher may begin by wanting to find out about a group of workers and end up writing about their union executives instead".³⁶

The fact that "nearly all trade union histories are based on union evidence alone",³⁷ has meant a serious obstacle to alternative perspectives, more critical and less nationally oriented. An important corrective, access to employers' records, has only recently become more commonplace. A number of earlier histories suffered from a lack of such access (whether or not their authors wished to use this source).

One long accepted advance from the more traditional narrow perspective, however, has been the recognition that "union history must be firmly set in the context, structure, technological development and economic situation of its industry". Jefferys was the earliest and most celebrated example of this development. But Hobsbawm has warned that "the awareness of economic history as a background may conceal a failure to think out the more specific relations between the union's fortunes and the history of its industry". He has also argued that "single union" histories necessarily distort the almost invariably multi-union experience of individual industries.³⁹

Many modern historians of labour have chosen to break away from the boundaries that a study of one union imposes. The subject is, for example, richer for the studies of Hinton and Croucher on the engineering shop stewards' movements of the two world wars.³⁹ Similarly, the History Workshop series of publications has focussed attention on the relatively neglected central role of work experience.⁴⁰ However, the development of labour historiography in these and other areas, while a healthy reaction to narrower traditional institutional accounts, does not invalidate the usefulness of union histories. On the contrary, it adds extra dimensions.

Francis and Smith, for example, incorporated some of the newer approaches in their study of the South Wales miners. Of course, the SWMF was exceptional; it was not only more "intimately associated with its society" (the South Wales coalfield) than most unions, but was also, until 1945, effectively an area union, covering only a small, though

densely populated, part of Britain. Yet despite the relative advantages of their "chosen union", the authors argue more generally that "the dismissal of histories about trade unionism as 'old hat' can be as crippling as making them the sole purpose of labour history".⁴¹

Recognition of the above points has affected the approach taken in this thesis. It is not an institutional history; it is not based solely on union sources, nor is it concerned only with a national perspective. It is not a narrative history, nor does it attempt to cover the whole of the union's existence. It is, however, a "single union" history, but this is not a serious problem for the pre-1939 period. There was, at this time, a general absence of other unions in NUVB "territory", and coachbuilding (and bodybuilding) activities were usually separated from engineering operations in the various industries. (The major exception to this was the NUR's presence in the railway company workshops from 1913.)

Given the necessary reliance on historical records, the method adopted in this thesis can best be illustrated by a discussion of the source material.

Primary documentary sources and their problems

The main primary source has been national and local NUVB records. These were supplemented by archives of employers' organisations, and, where appropriate, other unions' records, especially the GRWU. Union material included minute books of branches and executive committees,

union journals, and miscellaneous correspondence. Employer records were generally minutes of internal meetings, correspondence and memoranda, but also, for the EEF, verbatim notes of central and some local conferences. The national records, of course, reflected the various organisations' decisions of what to keep. Accordingly, NUVB head office correspondence did not survive in the national archives; where it was found, in other locations, it proved extremely illuminating. Even the massive EEF records had their own lacunae in the form of "Case Registers", recording the briefest mentions of those cases where the files were not kept. The use of surviving national material was essential given the topic, while the choice of which local records to consult is discussed below.

Of the car industry areas, Coventry selected itself, being the home of numerous large and small car manufacturers and a number of coachbuilders, as well as a very high level of NUVB membership in the 1920s. The Coventry NUVB branch minute books, complemented by the Coventry engineering employers' minute books and other NUVB and EEF material, enabled a fairly detailed picture to be constructed. Similarly, Oxford with two large initially non-union car factories (one of which became unionised by the TGWU), and a very weak NUVB presence, not only enabled a contrast with Coventry, but also raised the centrality of the 1934 Pressed Steel strike in establishing the TGWU as a rival organisation in the industry. Here, in the absence of employers' records, the main, but not the only, source material was the local branch's minute books; however, given the emphasis in this part on the NUVB's faltering efforts at organisation in Oxford, the existing sources

appeared to be adequate. A detailed study of the NUVB's efforts throughout the interwar period at Austin, Ford, and Vauxhall would, even if the material is available, have merely duplicated much of the Oxford experience, which is clear from the sources used for these firms in chapter 8.

As the study of the interwar period focussed mainly on the car industry, it was unnecessary to investigate in detail any particular one of the railway company or contract shop branches. No attempt was therefore made to see whether any local material survived beyond that available in national NUVB records, nor to consult the railway companies' archives. However, to acquire a greater understanding of the union in its more traditional craft-based areas, it was decided to investigate one of the larger (non-railway) centres. Some of this could be garnered from organisers' reports and minutes of quarterly District Councils published in the NUVB Journal, but more detailed material was necessary.

Most large centres of membership posed a number of problems. London was split into a large number of geographical branches, while a significant portion of the membership were forced to move around London in search of work. A very inadequate picture would have emerged even if branch records could have been located, while the surviving minutes of London-wide NUVB committees for this period were not particularly detailed. With the amalgamation of the Wheelwrights & Smiths in 1925, many big English provincial cities (eg Manchester, Liverpool, Birmingham) then had two separate branches. In Birmingham there were

also the Saltley and Handsworth branches (based mainly around the railway contract shops). The Greater Manchester area, apart from the railway branches of Newton Heath, Dukinfield, and Openshaw (the last having a sizeable non-railway membership), also had a number of smaller branches. Glasgow, however, had the advantage of having a single branch (apart from the Springburn branch for the two Glasgow railway workshops). Its branch minute books were also publicly available, along with the manuscript records of the Scottish District Council. Glasgow was therefore chosen, and had the unforeseen bonus of Charlie Milne's EC reports to the Scottish District Council, which were an invaluable addition to the otherwise fairly terse and unhelpful minutes of the NUVB EC in this period.

If the study had been continued forward into the postwar period, then, irrespective of the need to study developments in Luton, Dagenham, and Paisley [for Linwood], it would have been my intention to devote considerable attention to the Birmingham area; for here a militant policy developed in the late 1940s and early 1950s around the various car factories and railway contract shops. Also, as the NUVB was in competition with other unions to organise motor industry workers in the postwar era, any further study would have had to situate the NUVB in this multi-union environment. This would necessarily have involved treatment of the accommodations and conflicts with the TGWU especially, the AEU to some extent, and the Sheet Metal Workers. It would have built on the classic study of Turner, Clack and Roberts, as well as producing factory case studies of the type recently published by Tolliday.⁴²

Of the employers association records, the NFVT and UKJWB were a minor source, but gave some insight into the coachbuilding employers, otherwise totally unavailable from the published literature. By contrast, the EEF had immensely detailed records, though, fortunately (only in respect of the time spent reading often hazy microfilm) relatively limited on the NUVB in the interwar period; the Coventry engineering employers minute books were very helpful in highlighting the major issues in Coventry. Minutes of board meetings of three firms were useful in illuminating particular points on production strategy, but were otherwise very limited. With the normal constraints on the time available for research, no attempt was made to include any more company records, though they would have assisted in painting a fuller picture of the period.

A number of issues are raised by the use of such documentary material, which are not often discussed. According to the Webbs, the "Document" (and minutes of meetings were included in this category) was "a kind of mechanical memory, registering facts with the minimum of personal bias".⁴³ Carr, for one, has attacked the nineteenth century "fetishism of documents", the attitude that "If you find it in the documents, it is so". His riposte was that "No document can tell us more than what the author of the document thought".⁴⁴

The main document writers, in this case, were the union minute-takers, the branch and area council secretaries and the general secretary. Omission (wilful or otherwise) of reference to certain issues would often be impossible to detect (though potentially serious for the

researcher). Despite the Webbs' comment above, they also acknowledged in the same publication that "documents, however frank and confidential, are apt to distort facts as well as to display them", and gave an example of the seriousness of such omission. Trade union branches "may have been engaged in a peaceful but successful maintenance of their old-standing Working Rules, or a new regulation may silently have become habitual, or an old one silently dropped, without this action on the part of the members rising to the surface in any document whatsoever, public or private."⁴⁵

Distortion or misrepresentation of the discussion, and sometimes even the proposed action (if any), would be difficult to detect in the absence of alternative sources; but where some idea of the minute-writer's general position has been acquired, and especially where other sources exist, some compensation can be made (though the general problem of verification will be discussed below). In the research for this thesis, a further serious problem encountered in the perusal of union documents (apart from illegibility of many manuscript sources) was brevity, often to the point of rendering the minute almost worthless. Necessarily, in this case, other sources (where available) were essential just to make sense of many such minuted points.

The important source material of regional organisers' reports in the NUVB Journal more obviously reflected their interpretation of the important disputes and negotiations of the previous quarter; but also gave them the opportunity (if they were prepared to use it, and not all were) to openly put forward their views on general issues facing the

membership. The verbatim minutes of EEF conferences, while being constrained by the "ritualism" of formal bargaining,⁴⁶ were usually very clear statements of the respective parties' negotiating positions; in that sense, they were among the better primary sources, but where examples of some practice, raised by one side, were disputed, caution was again necessary.

Finally, even the Webbs conceded that while "The written word ... is usually of higher evidential value than the spoken word", it is "equally in need of verification". They acknowledged the "exceptional difficulties" of this process in social investigation, arguing that the "accumulation of many observations may amount to quite effective verification".⁴⁷ It is in this spirit that the verification of the various documentary material used has been attempted.

Oral sources

While based mainly on written records, some oral sources were used for this thesis. In particular, Bert Edwards and Stan Wyatt gave extensively of their time to answer all sorts of questions concerning the union and the trade. Other oral archives and secondary accounts based on oral sources have also been used. But although the description of particular work processes would probably have been improved by further oral accounts, which are particularly valuable for giving the "feel" of periods and places, in other respects there would be a number of limitations.

The technique used by Friedlander⁴⁸ of identifying a key individual and, in conjunction with that person, building up a picture of particular events, was not feasible for this thesis. Shorter contacts ran up against lapses of memory, conflation of events, and confusion of dates. This was further heightened by the time period under consideration; at best, surviving NUVB members would have only been young men in the 1920s and many would not have been "union-minded" at the time. Particular recollections would often be unverifiable in the absence of other written or oral sources. For the post-1945 era, these drawbacks would be less serious.

Secondary sources

The emphasis on technical changes in both the materials and the methods of production necessitated an extensive search into the technical periodical literature, supplemented by various in-house motor and railway company magazines. No claim is made to an exhaustive search of these sources but, for the present purposes, the material presented and analysed is more than adequate. The collection and selection of further data would only refine, rather than alter, the analysis.

Again, the importance of an understanding of the structure of the industries the NUVB organised in, required building up a picture, achieved mainly through the use of secondary sources. The material relating to car and car body production figures was generally based on primary research by the authors in question, though there were some problems which have been examined in chapter 5. In surveying the railway

companies, the interpretation is based on the extensive secondary literature. Attention was focussed on the railway workshops, and specifically the carriage workshops; this important area of railway activity has received very little coverage, not just in the histories of the numerous railway companies, but also in the field of trade union history. The account of the origin and development of company workshops in Appendix 1 should therefore be seen partly as an attempt to rescue these, often enormous, "railway factories" from the obscurity they have suffered. They were major employers of engineering and coachmaking labour, and remained so throughout most of the motor car era.

Personal observation

Finally, one further source needs to be acknowledged, and that is my own personal observation and experience of car factories. Having worked in a car body factory for nearly five years I had acquired some knowledge of the various technical processes of car body production. Although I was a spot-welder on a body-building assembly line for most of the time, I initially also worked in the paint shops, the press shops, and on a trim line. Visits to the body, paint, trim and assembly shops at Dagenham, Longbridge and Ryton, as well as what was the Morris Motors plant at Cowley confirmed the basic similarity of the various assembly line processes which had not changed greatly (except in scale) since the 1930s.

My main motive for working in a large motor car factory was to gain first-hand knowledge of the realities of shop floor life and industrial

relations in the industry. The choice of factory was accidental, and while I soon became acquainted with the history of the union organisation in the plant, I did not realise at the time how significant that would be. When I started my historical research on the motor industry a few years later, I gradually became aware of the importance of the Pressed Steel Company in two major respects. Firstly, how dominant a supplier of steel bodies it had been to a large section of the industry, the evidence for which was still visible in the early 1970s. And, secondly, the fact that the TGWU had organised the factory in the mid-1930s, the only example of mass unionisation in the interwar industry, with the implications that had for the NUVB's own organising policy. The years I had spent in "A" Building, where the 1934 recognition strike had started, and as a member of the TGWU "5/60" branch established as a result of that strike, took on a new meaning.

D. CHAPTER OUTLINE

As Bain has argued, "Every scientific investigation has some analytical framework to guide the selection of relevant data from the infinite mass of available material and to help organise this data in a meaningful and coherent form once it has been gathered".⁴⁹ The analytical framework chosen for this thesis reflects the rejection of conventional trade union historiography, in favour of a thematic account. While there are other possible arrangements of the material, this particular organisation provides a suitable framework for tackling the questions raised at the beginning of this introduction.

Very briefly, the thesis is divided into two parts covering separate periods, being roughly divided by the first world war. Within each part, the material is arranged into four chapters, not in a narrative sequence, but each covering a separate topic. The chapters themselves are divided into sub-topics. Sometimes the division between the major sub-topics is chronological (for example, parts 1 and 2 of chapter 7, and sections A and B of both parts 1 and 2 of chapter 8, where the 1920s and the 1930s are covered separately), but more usually thematic. Only chapter 1 is based mainly on a narrative account, and while a narrative sequence is observed, where appropriate, in the treatment of individual sub-topics in the other seven chapters, their emphasis is on description and analysis.

The first part of the thesis covers the period up to 1914, and clearly develops the argument that the coachmaking trade overall was far from the "static" backwater of industry that Pelling has suggested.⁵⁰ The different branches of the "private" trade developed and changed over time, and the rise of new vehicles further changed the nature of much of the trade where these vehicles were built. The pace of change varied between the different sections of the increasingly disparate vehicle building industry. Change was therefore a fact of life for coachmakers before 1914, and was not confined to the interwar years.

The first two chapters deal with the coachmaking trade generally, chapter 1 concentrating on the development of trade unionism and chapter 2 on the different branches of the coachmaking trade. The main areas of painting and wood and iron working are identified, and the changes that

took place in them up to the end of the nineteenth century. The varying quality of apprenticeships is highlighted, and chapter 2 ends with an analysis of the "piecemaster" system of subcontracting in the industry, which had enormous consequences for coachmaking trade unionism and the division of labour in the centre of the trade - London.

The next two chapters move away from "private" coachmaking and cover the new areas of railway carriage and motor car body building. While motor cars developed from 1896, railways started at the beginning of the second quarter of the nineteenth century, both areas taking over and eventually adapting traditional coachmaking techniques. The undercarriage of the private coach was replaced by the railway carriage underframe and the motor car chassis, and work correspondingly lost by coachmakers. The scale of production (in terms of size and numbers produced) of these new vehicles made the application of woodworking machinery more feasible. Not only, therefore, were some branches of the trade redundant, but the transferred bodymaking skills required less handwork. At the same time, the new trade of "coach finishing" was spawned by these two industries, and bodymakers came to handle metal panels as part of their job. Chapters 3 and 4 also look at trade union activity in these new industries, the former especially relating the rise of the GRWU and then the NUR to mass unionisation in the railway company workshops.

The second part is divided into four, much longer, chapters, each covering the whole interwar period but focussing on particular aspects. Chapter 5 deals with vehicle building generally, concentrating on two

features - the structure of the different industries; and the increasing division of labour and the introduction of assembly lines. Chapter 6 looks at the two major technical changes during this period, chapter 7 at the union's attempts at organisational change, and chapter 8 at the union's situation in the car factories. While the issues covered in each chapter are analytically distinct, their treatment necessarily involves some cross-reference.

Chapter 5 is divided into three parts: cars and coachbuilding; railways; and buses and trams. The importance of the interwar coachbuilding sector in the production of all sorts of bodies for the car companies is detailed. The major changes in the organisation of motor car work are analysed, dealing with a chronology of the introduction of assembly lines into various factories, and the changes in wood-framed bodymaking and trimming. The second part identifies the introduction of flow production techniques into the railway company workshops, as well as looking at the rationalisation of the railway companies into four main groups, and the rationalisation in the railway contract industry. The final part on buses and trams looks at the situation facing NUVB members in the bus and tram operating companies (especially London) and the London bus building industry.

Chapter 6 is a study of two major technical changes. The first is the rapid transition from paint and varnish to cellulose. The almost total changeover from paint to cellulose on car bodies took two to three years, and, in that sense, constituted a revolution in the trade, but its impact on the union was tempered by three factors. Firstly, the

cellulose spray of 1925-26 had been preceded by paint spraying and flowing techniques in the bigger car factories since the end of the first war; secondly, car output was still expanding (until 1929); and thirdly, even the spraying of paint (let alone cellulose) on vehicles other than cars remained very limited until well after the second world war.

The second technical change is the change from wood-framed, metal-panelled to all-metal vehicles. The change is analysed first in the car industry where it is shown to have been a much slower overall change than was the case with paint technology. In particular, the rise of new steel body factories is identified (especially Pressed Steel) which meant that in most car factories it was not the existing workforce that was confronted with the new techniques and the employers' desire to employ semi-skilled labour on them. The next three sections look at the introduction of the all-metal bus and railway carriage, which transition took place over a much longer time-scale than in the car industry. It also tended, again unlike the car industry, to occur in the same establishments and with the same labour force that had built "composite" vehicles. In the case of at least one railway company, the changeover from all-wooden to composite carriages had hardly been completed when all-metal carriages were being built by another.

The problems involved in NUVB members retaining the bulk of the equivalent operations on all-metal structures varied from one workplace to another. Where they had won the right to do the metalwork on composite vehicles, they were in a stronger position to challenge for a

substantial proportion of the all-metal vehicle. Section B also therefore includes a protracted and very bitter struggle between the NUVB and the Sheet Metal Workers in Scotland over the line of demarcation as buses gradually changed their material of construction. Section D also deals with the NUVB's attempts, in particular in the early post-second world war period, to implement a common policy in the bus and railway carriage sections of the industry.

The first part of chapter 7 covers the union's efforts to cope with semi-skilled and female labour in the car industry in the 1920s. The second part then looks at the complex events that led to the setting up of an Industrial Section in 1931, identifying a financial crisis as the key factor. The actual coverage of Industrial Section membership in the 1930s is analysed, and its irrelevance in the car industry branches noted. A major organisational factor limiting any substantial change in membership recruitment patterns is identified as the need to fund the union's superannuation benefit commitments. Finally, the last section analyses the massive loss of membership in the early 1930s; and finds the cause to be closely linked to the increased financial demands put on the employed membership, rather than any permanent shrinking of the skilled vehicle building workforce due to technical changes and the rise of mass production.

Chapter 8 analyses the strength or weakness of the union in different car and car body factories. The numerous Coventry workplaces are taken together in part 1 and the NUVB shown to have been in a relatively strong position throughout the 1920s, based to a large extent on the

employers' needs for their members' specific vehicle building skills in a tight local labour market. The union's position was shattered in the early 1930s, though partly rebuilt later in the decade. While the need for skilled labour was declining throughout the 1930s, this is shown to be too simple an explanation for the collapse that took place. The second part deals with those mass producers sited outside of Coventry. Particular attention is paid to Morris Motors, where the union's failure to make any headway in the 1920s was not for want of trying, and Pressed Steel, which became the only large car factory to be successfully organised in the 1930s. The success of the TGWU at Pressed Steel, due to a unique combination of circumstances, had immediate consequences for the NUVB's claim to speak for the body side of the car industry. The failure of the 1929 Austin strike, where the NUVB was more prominent, is analysed, and some attention paid to the non-union firms of Ford and Vauxhall.

The conclusion then summarises the main arguments of the thesis, answering the empirical questions raised above. It also discusses the three general issues mentioned at the end of section A above, and includes a brief note on interwar strikes, before ending with a few further comments on method. Finally, when this study refers to the NUVB it does so in the understanding that "Organisations do not perform actions or take decisions: rather, certain people decide and act in the name of organisations".⁵¹

PART I

BEFORE THE FIRST WORLD WAR.

CHAPTER 1. EARLY COACHMAKING TRADE UNIONISM

A. INTRODUCTION - THE COACHMAKING INDUSTRY

Compared with many trades, coachmaking was a relative latecomer. While the evolution of the coach from its sixteenth century origins will be addressed in the next chapter, this chapter will be mainly concerned with the nineteenth century. Coach ownership was for the minority, it being noted in 1842 that "as it is only persons in affluent circumstances that can afford to keep them for their own use, they are liable to change of fashion, both in their shape, size, ornaments, and name, like most other articles used by that class of the community."

One constant complaint by the trade was the taxation of the use of carriages, variously on the owner (either private or public, viz. stage coaches or hackney carriages), and the coachbuilder who hired out carriages, as most did. Starting in 1637, these taxes were particularly heavy in the early 1790s and between 1810 and 1825, with consequent effects on the level of employment in the industry. Although there were various tax reductions and relaxation of restrictions in the third quarter of the nineteenth century, the income from carriage tax licences was around £550,000 each year between 1876 and 1886, compared to the turnover of the coachmaking industry of about £2½ million.² Despite this high level of taxation, the number of carriages in use expanded very significantly in the middle years of the nineteenth century, as shown in table 1:1..

Table 1:1 Number of carriages in use, 1814-1874.²

	<u>4-wheels⁴</u>	<u>2-wheels⁵</u>	<u>Total⁶</u>
1814	23,400	45,800	69,200
1824	29,000	51,000	80,000
1834	49,000	50,000	99,000
1844	62,000	33,000	95,000
1854	68,000	137,000	205,000
1864	127,000	170,000	297,000
1874	150,000	285,000	435,000

While this table has a number of problems (explained in the footnote) it does illustrate the big growth in the number of carriages in use between the mid-1840s and the mid-1870s, despite the development of the railway network at this time. How many vehicles were actually built from year to year is not known, though a duty levied on carriages for sale between 1810 and 1825 gives some figures - namely, 3,636 built for private use in 1814, and 5,143 in 1824.⁷ This would suggest a life of some 15-20 years for existing carriages early in the nineteenth century, which highlights the importance of repair and repainting work in the trade.

Along with the growth of carriage usage, there was a steady expansion of the number of coachmakers enumerated in the census returns.⁸

Table 1:2 Adult male coachmakers, England and Wales, 1831-1871.

<u>1831</u>	<u>1841</u>	<u>1851</u>	<u>1861</u>	<u>1871</u>
5,155	10,031	12,900	15,909	19,012

During the second half of the nineteenth century, there were generally around a thousand coachmaking businesses in Britain and Ireland. About one quarter of these were in London, though the exact proportion declined as the century progressed.⁹ A UKSC branch survey in the mid-1860s revealed their knowledge of at least 436 coachmaking shops in Britain and Ireland, excluding London and a few other towns.¹⁰

Of the 915 coachbuilding employers reported in the 1851 census for England and Wales, about 19% did not furnish details of the number of employees, and as this group employed an estimated half of the employed coachmakers, it makes it impossible to gain an accurate impression of the size distribution of firms in the industry. This is further compounded by the inclusion of railway coachmakers in the figures, and the use of sub-contractors known as piece-masters (see chapter 2). However, from the information available, we know that a minimum of 549 of the firms employed less than 10 each, averaging just over 4 apiece. At least another 128 firms employed only between 10 and 19. The bulk of the employers were therefore small, and many very small. London, with 29% of the employers in Great Britain, and 30% of the total workforce, might be expected to have a similar size distribution. And, in fact, at least 158 of the 280 London firms employed less than 10, averaging less than 4 each. There were, however, a number of fairly large employers scattered around the country. While the census returns only definitely pick out 16 firms employing between 50 and 150, there were undoubtedly more, particularly in London.

Coachmaking firms were scattered in towns and cities around the country. Because of the need to service the local market (especially for hiring and

repairs) in country districts, many small towns had coachbuilders, as well as the large metropolitan centres. Apart from the relative decline of London, there was further unevenness among the districts. Thus, while Newcastle and Dublin, for example, declined in importance,¹¹ the Midlands increased. In 1891, Benison Brothers of Leamington (which had recently taken over the Mulliner business in that town) was employing about 60; while Forder Brothers of Wolverhampton, which specialised in hansom cabs, employed about 120, though this was down to 70 at one stage in 1892. In Birmingham, a few years earlier, Marston had 200 in constant employment, Startin a "very large" number, while Mulliners claimed "by far the largest number of workmen ... of any coach factory in the Midlands".¹²

However, the development of the railways even before the UKSC's notional date of formation in 1834 (see below) brought in its train the phenomenon of very large factories (explored in chapter 3 and appendix 1) which co-existed with the traditional smaller employers of "private" coachmaking. The growth of large motor car factories in the first decade of the twentieth century did not therefore mark a major break with the previous employment pattern in the industry.

B. COACHMAKING TRADE UNIONISM, 1700-1850.

Eighteenth Century Unionism

A number of years ago, Allen criticised the Webbs' approach in "The History of Trade Unionism" in leading them to neglect the eighteenth century.¹³ However, as Allen himself noted, "There was, in a sense, no trade union history until they wrote it".¹⁴ The neglect of the eighteenth century can more properly be laid at the door of nearly a century of subsequent labour historians. When Hobsbawm surveyed trade union historiography in the early 1960s, he observed that, apart from the printing trade, eighteenth century trade unionism had hardly been touched upon.¹⁵ This situation has not significantly changed in the interim.¹⁶

When studying early combinations of workmen in vehicle building in the eighteenth century, it is clear that there is evidence of some organisation. One picture of combination in the eighteenth century building industry is suggested by Postgate. "Actions 'in defence of the craft', first against improperly employed apprentices, and then generally against worsening conditions, become more and more frequent, and the club which originally was held only for sociability and beer-drinking - at the most, for some 'friendly' benefits - gradually becomes a trade union."¹⁷ It is clear from the available evidence that this speculative account would not do justice to the vehicle building experience, where wages appears to have been the main issue stimulating combination in this period.

References to combination date from the first quarter of the eighteenth century. The Webbs, referring to "The Case of the Master Taylors etc" in 1720, cite a contemporary report that "This combination of the Journeymen Taylors is of very ill example to Journeymen in all other trades; as is sufficiently seen in the Journeymen Curriers, Smiths, Farriers, Sailmakers, Coachmakers, and artificers of divers other arts and mysteries, who have actually entered into Confederacies of the like nature".¹⁹ And in 1721 the journeymen coachmakers were criticised for having entered into a combination to raise wages, thereby setting "a very ill example to journeymen in all other trades".¹⁹

In 1753 the Worshipful Company of Coachmakers and Coach Harness Makers complained that "very many of the best hands of the journeymen have risen to such an intollerable, insufferable, insupportable heighth of self-sufficiency and disobedience in behaviour towards the Masters, not in the least submitting to their government, management, or direction - very many of them refusing to work by the day, or any otherways than by the Great, or peice". And these journeymen demanded "unusual and unwarrantable wages".²⁰ A committee of the court of the Company was appointed in 1789 "to consider of some regulation to be made in respect of the prices now paid to the journeymen of this trade, and to draw out a regular set of prices to be paid to the said journeymen by the masters". Three years later a book of prices was agreed by the committee and then "it was submitted to consideration by five journeymen, three of them coachmakers, and the others harnessmakers and trimmers".²¹

The other London company that concerns this study, the Wheelwrights, had more trouble with their journeymen in the eighteenth century than the coachmakers. As early as 1714 in this trade a journeymen's club was formed "with the object of furthering the interests of employees of the Trade, particularly in respect of wages and conditions of employment".²² A strike took place in 1718 over wages and hours of work.²³ This was followed in 1734 by a strike of the "Journeymen Coach Wheelers" for a two hour reduction in the working day, an extra shilling for every pair of hind wheels, and an extra shilling for hewing every one hundred spokes. A charge of conspiracy was brought against 42 journeymen. The journeymen suggested a compromise - an extra sixpence for 100 spokes, and working hours to be 5am-7pm in summer, and 6am-8pm in winter. The outcome is unknown, though we are told this was "the third time they have advance their wages within these 16 years".²⁴

Another wages strike in 1745 was restricted to Holborn, Westminster, and Southwark.²⁵ And in 1781 a further demand throughout London for an increase from 14s to 18s for a set of wheels, with daymen's wages raised in proportion, led to a strike in 1781 or 1782, and several men were tried in court and found guilty.²⁶ The evidence suggests that most, if not all, of these strikes were of coach wheelers, who built coach wheels, rather than cart wheelers, who built the whole of the cart.²⁷ Despite the Webbs' refusal to countenance any continuous link between guilds and trade unions, there appears to be a connection between this early organisation of journeymen coach wheelers, and the London Society of Coach Wheelwrights which later joined the United Kingdom Society of Coachmakers.²⁸

The early nineteenth century

Outside of London, surviving evidence of journeymen organisation dates only from the early nineteenth century. One example of a friendly society which was not a trade union was in Edinburgh where in May 1800 the Friendly Coachmakers Society was formed. "Several individuals in the employ of Messrs Cleghorn & Wilson having observed the many advantages resulting from the establishment of Friendly Societies, particularly of those following the same occupation, conceived an idea of forming an association to consist of coachmakers only". Men from the firm of Messrs. John Learmouth & Co also joined at this time.²⁹ In 1808, when new rules were established, the society was confined to men employed by the above two Edinburgh coachmaking firms. The two employers contributed to the Society's fund, which was for sickness, incapacity, and funerals. The Society, an alternative to the friendly society benefits offered by trade unionism, was still in existence in 1852, being called "The Princes Street Coachmakers Benevolent Society" by then.³⁰

Ireland boasts the earliest documented evidence of trade union activity among coachmakers in the nineteenth century. The "Coachmakers Friendly Society of the City of Cork" dates from at least October 1812, when there were 8 members on the committee and 24 other members. Each man had to prove his "lawful" time, and any "lawfully entitled" coachmaker coming into Cork and unable to get employment, would be helped financially to Dublin or Bristol. One early resolution of this Society was that those men working "the long hours", ie 6am-7pm, should refuse and only work 6am-6pm from May 10 1813, having given the employer 6 clear days' notice. In October 1813 it

was agreed that any man, believing himself entitled to an advance of wages, should see the committee, and if they agreed, he would be supported if it was necessary for him to leave his employment.³¹

Dublin also saw an incident in 1813 suggesting some kind of organisation. The firm of Huttons engaged an English coachmaker who was a polisher. This man brought with him new processes of working, which led to the men under him earning higher wages. The other men objected to him, because he was English, and because of his new methods, and he was physically attacked so that he was unable to work again. Huttons spent £450 discovering the perpetrators and having them imprisoned, but the firm found this "cheap, in the tranquillity which it secured to them afterwards".³² The "tranquillity" broke in December 1824 when 54 of Hutton's 58 smiths (out of a workforce of 221) came out on strike for a fortnight, objecting to the importation of English ironwork at a time when Hutton claimed all the forges were fully occupied. The "Coach-smiths of the city of Dublin" contacted him, but he refused to see them, meeting instead a deputation of his own workmen. He refused to budge, and 47 of the smiths returned. Two of those who did not go back were his best workmen, and he believed they were held back to put pressure on him.³³

In England, the most important coachmaking organisation was based in London. The "Benevolent Society of Coachmakers" was officially established as a friendly society only in 1816, containing a rule that "no journeymen shall combine against their masters". The Duke of Suffolk was even their patron. But there was another, secret, set of rules, and a Grand Committee was elected from the different branches of the trade, it being punishable

to reveal the names of its members. That same year, masters in the coachbuilding industry had met in Holborn to agree upon a general reduction of wages. Journeymen gathered outside to protest. The Benevolent Society was formed soon afterwards with William Connell as its general secretary, and became active in a number of towns. A journeyman came from Bristol to London, where he came into conflict with the Society. When he returned to Bristol, members there told Connell where he was working, and Connell threatened his master into dismissing him.

Correspondence from Connell to a member in Reading accidentally fell into the hands of a Reading employer who passed it on to the London employer, Luke Hopkinson. This letter explained that all tramping was to be stopped in order to preserve finances for the support of a big strike expected in London in 1818. If this strike was successful, attention would be turned to the provincial towns which "we will attack, one after another, until our system is established all over the kingdom". A letter was left on the various masters' premises in London in February 1819, signed "An Enemy to Intolerance", which listed 14 demands. Hopkinson told his own men they must leave the Society or leave his service, which precipitated a strike of the spring makers, spreading to the master smiths who were employed by the coachmakers. However, the earlier letter to Reading was used as the basis for a prosecution against Connell and twenty others. They were all found guilty, but discharged on condition of not reviving the combination.

Connell had, in April 1818, apparently approached Hopkinson and proposed a plan for regulating the trade. Masters should observe union rates, and agree among themselves their selling prices. The union would

coerce those masters who tried to undercut these prices by withdrawing labour and cutting off supplies. But these ambitious ideas came to nought, and the defeat of the Benevolent Society had long-lasting consequences for the future of coachmaking trade unionism in London. Despite remaining the centre of the coachmaking trade throughout the nineteenth century, London became a blackspot for trade unionism in the industry.³⁴

Elsewhere, however, organisation was relatively unaffected by the London events. Bristol and Dublin coachmakers were among those sending communications to Parliament asking for an alteration in the combination laws in the mid-1820s.³⁵ Further evidence of trade unionism before the Combination Laws were repealed is shown by the establishment of societies in Leicester and Nottingham in 1823.³⁶ In later years, UKSC members claiming superannuation benefit dated their membership of coachmaking societies back to 1822, 1821, 1820, and even 1815.³⁷ Regional groupings existed in the late 1820s and early 1830s. A society existing in Carlisle in 1829 joined the "Northern District" sometime before 1834;³⁸ a Leeds Coachmakers Friendly Society existed in 1829;³⁹ the Manchester UKSC branch dated itself back to 1829,⁴⁰ while a document survives of the "Liverpool branch of Lancashire Union of coachmakers, established March 1832".⁴¹

The regional grouping covering the biggest area was the Midland Counties Union, formed in 1831 when "delegates met to revise the former existing laws, and the Society was changed from the Nottingham Society to the Midland Counties Union".⁴² A tramping card of this organisation proclaims "To prevent and detect fraud, the Trade of the above towns give notice, that no Cards from the said towns are legal, unless bearing the above seal

and impression". Twenty eight towns were listed, most of them in the Midlands broadly defined; but also included were Newcastle upon Tyne, Devizes, Reading, Twickenham, and Windsor.⁴³ An MCU card, issued in April 1834, was relieved that month in St. Albans and Hertford, both absent from the MCU list, suggesting some reciprocal arrangement existed.

Interestingly, the Midland Counties Union did not include Wisbech, where a society had been established in May 1827, despite its relative proximity to Spalding, which was in the MCU. The Wisbech Society rules have fortunately survived in the Webbs' manuscript notes, but it is not clear whether the rules date from the 1827 origin or from 1835, when they were printed; and this is of significance because of the later controversy surrounding the actual date of formation of the United Kingdom Society of Coachmakers. The Wisbech rule that "Every person who can produce a regular certificate satisfactory to the Secretary, or members of this Society, shall receive his proper relief for the purpose of defraying his expenses to the next town" provides confirmation of the existence of reciprocal arrangements between local societies for tramp relief. While the absence of a society in London at the time is shown by the rule: "If any member shall work in London or in any town where there is no Society of coachmakers, he shall send his card to the nearest town where there is a Society; he shall also contribute the same as the Society to which he sends it, and on his leaving shall receive one of their certificates in its stead".⁴⁴

Origins of the UKSC

When it comes to deciding when the United Kingdom Society of Coachmakers was formally established, the existing evidence is similar to a jigsaw puzzle with many of the pieces missing. General Secretary John Waldron told the Royal Commission on Labour in 1892 that the UKSC had been established "from an early date in the present century; I could not give the exact date, but as near as I can get it about 1825."⁴⁵ In the same year another union member told the Webbs that the original society was founded in 1827, and was reconstituted in 1834.⁴⁶ Charles Kinggate, a future General Secretary, wrote in 1904, "I have tried to find out who were the founders but have not been successful, we have no records in the archives of our office, but we have proofs of its existence in 1827, though we date from 1834".⁴⁷

The year 1834 had been decided upon, for benefit purposes, by a vote of the members in 1858. The relevant copies of the Quarterly Report have not survived, but Charles Kinggate's brief history supplies the details. The EC discussed in 1858 the qualification for superannuation benefit in terms of years of membership: "The question is, has this Society been in existence 40 years? We have records of men paying money and relieving unfortunate brethren in 1817. Our superannuated members assert that they have paid since their apprenticeship, but still the query is, was it to this Society? Can they, having paid money, ruling their own affairs, giving relief to Coachmakers as they passed through, as much as they could afford, holding little or no intercourse with other towns, be called being uninterrupted members of this Society ?"⁴⁸

The EC asked for a vote on the date of origin of the UKSC, and the members voted for 1834.⁴⁹ However, eight years later, in 1866, the then EC complained that the 1834 starting date "has been overlooked by our predecessors" for superannuation purposes, and therefore "we have reluctantly had to reduce the payments to most of the superannuated members."⁵⁰ Later that year, the Delegate Meeting thought differently. "We consider that under the old rule great injustice was done to those of our members who in 1834 were too old ever to become entitled to the highest rate of Superannuation Benefit. The injustice done to such we have endeavoured to meet by a law which will at once enable those belonging to a Coachmakers Society 8 consecutive years prior to the above date, to come upon the highest rate of superannuation."⁵¹

The EC therefore reinstated on the higher rate those who could prove membership of a coachmakers' society since 1826. An appeal from one member, for example, was answered by evidence against him having joined before 1831; but the EC complained that it was often impossible to find proof of membership back to 1826, and that some, not entitled to the higher rate of benefit, would receive it only because no one disputed their claim. So they proposed in 1867 to return to the original ruling, and this was accepted.⁵²

It has been suggested that before 1834 what became the UKSC was a "federation" for tramping purposes.⁵³ Certainly, tramping remained a central feature of the society for a good number of years, but in 1834 there took place an event which, according to Kinggate "undoubtedly consolidated our society, and fixed the date of its establishment". In the

first week of December 1834 a strike started in Liverpool and Manchester over the employers' demand that the men should leave the Society.

This demand was probably related to two factors. One was the increase in trade union activity generally in the early 1830s, exemplified by the six month lock-out of building workers in Lancashire in 1833;⁵⁴ the other was the increase in coachmaking work generated by the early railway companies, meaning that employers in the area most affected initially (the north west) felt vulnerable to Society activity. Whatever the exact reason, the strike continued until August 1835, by which time only 4 Liverpool employers were still holding out, leaving 11 Society members still on strike. All the Manchester members had returned successfully.

Over one hundred separate towns subscribed to the strike fund. The nine towns contributing over £100 provided some 60% of the total £4,983 subscribed. Kinggate believed that there was no question of fixed levies, and that contributions were voluntary.⁵⁵ From other sources we learn that John Evans "did, along with others working at that time in Liverpool, pay 10s a week for 6 months on behalf of it", and that James Ball, also working in Liverpool, "paid from 2-3 days wages [per week] to support it".⁵⁶

It seems highly likely that there was a local levy in Liverpool, and we can guess the same applied in Manchester, judging by the amounts donated. Strikes lasting several months, in Lancaster in 1838-39 and Exeter in 1840, were supported to the extent of the strikers being paid 4½ days normal wages each week.⁵⁷ These donations suggest that * pay was policy, and, in fact, the 1840-47 Rules, noted by the Webbs, provide for that level of

"turn-out benefit" to be paid by a levy on the whole Society. A national levy would probably have required some central authority to sanction it, and therefore nationally accepted rules. There is no evidence of either before 1840. The 1840-47 Rules say "Rules established at Edinburgh 1840. Revised and corrected at Taunton 1847". No record exists of any such meetings at Edinburgh or Taunton, but the inference is that these were the first national rules. They include the rule that no local law would be tolerated, and that any alterations must be made at a delegate meeting in Leeds on the first Monday of September 1843 (though again there is no record of such a meeting).⁵⁹ The fact that national rules definitely did exist in the early 1840s is reinforced by the Nottingham District rules of 1842 which were, according to the Webbs, "merely a reprint of the General Laws of the Society at the time."⁵⁹

However, while national rules existed, Kinggate believes there was still no central authority, no executive committee or general secretary; and that the society was in effect still divided into districts which had some local autonomy. The 1840-47 Rules state that strikes were not allowed without consulting district committee and "Central Committee at Manchester". But the only surviving reference to Manchester as a centre is in early 1848, and it is difficult to tell how effective it was.⁶⁰ It is also clear from the surviving evidence that branches maintained a fair amount of autonomy until the 1848 reorganisation of the Society, and that it took a few years before that tradition was finally broken. A good example of the pre-1848 reorganisation behaviour comes from Hull branch. The branch minute book shows that, between early 1846 and early 1848, contribution and relief payments fluctuated in line with the immediate state of branch funds.⁶¹

The 1848 reorganisation

In July 1847 the Hull branch decided there should be a "District Delegate meeting to form laws for the better Government of the Society". Such a meeting of the Yorkshire district took place in Leeds in October, and issued a circular, stating, among other things, "Tramps have increased fourfold; wages in most parts of the three kingdoms have fallen twenty per cent".⁶² The Society was in deep financial trouble, and this circular started the train of events that led to a General Delegate Meeting of the Society in Leeds on April 10 1848 where the Society was "re-established".⁶³

The Delegate Meeting sent out an appeal "To the Coach-makers of the Three Kingdoms" calling the UKSC "so perfect a wreck, so worthless, so much below the requirements of the trade, and practically insolvent".⁶⁴ The most important outcome of the meeting was the centralisation of the Society, with a local executive based in Leeds and a full-time General Secretary; while a national scale of contributions and benefits was laid down. The new rules became operative from July 1, and it was intended to bring in a scheme of Stationary [unemployment] Benefit from November, "a change so desirable in the constitution of our Society".⁶⁵ It was much cheaper, as is shown if we compare the cost of tramping (at 1s + bed for weekdays, and 1s6d + bed for Sundays) to stationary benefit (a two week qualifying period, followed by 13 weeks entitlement at 6s per week).

The number of tramps relieved in the three months from July 1848 was enormous, and such a saving was necessary both financially, and in terms of members' morale, in such periods of heavy unemployment. However, the first

quarter's expenditure on tramping was so high that the Society was immediately £164 in debt, and the stationary benefit scheme had to be abandoned.⁶⁶ The only way to meet this level of expenditure was to levy those members still in work, and for the first few years after 1848, general levies were common. This was done reluctantly, as the first (provisional) executive had stated: "Levies at all times are objectionable, and must, as far as possible, be avoided; yet, all will acknowledge that money is the mainspring of action".⁶⁷ But non-payment of levies rendered it impossible for the executive to send money where it was needed, and they asked the delegates to the April meeting to support them in stopping tramping benefit.⁶⁸ The financial situation was further compounded by the first general secretary, John Lawson, embezzling much of the funds that did reach the head office.⁶⁹

Manchester branch, however, decided to continue the benefit for one month, expending just over £11 on it. When the EC demanded they refund the money, they refused to do so; and of the 272 Manchester branch members, 54 attended a meeting at which it was decided to secede from the UKSC. They issued a circular suggesting that the Society be based on "its original principle that each District manage its own affairs". They also announced they would be issuing their old travelling cards, and that any town not honouring them must not expect their cards honoured in return. Initially the UKSC were left with only 5 members in the town, but that was sufficient for Manchester to remain a relieving branch.⁷⁰

In 1849 a national vote was taken on removing the head office from Leeds and changing the mode of government, but Leeds and the centralised system

were upheld.⁷¹ The "Manchester Independent" Society carried out its promise to collect the 3s levy ordered by the UKSC EC in 1848, but distributed it to those branches which were in debt. The EC took a conciliatory line and urged these branches not to take offence. The Manchester Independent recognised UKSC travelling cards and paid relief, and this was reciprocated by a number of UKSC branches. But a conference with the breakaway society to discuss amalgamation was a failure, and the EC finally severed any connection, stating that they would not sanction any member applying to the Manchester society for relief.⁷²

The Manchester events were the most dramatic, and symbolised the teething problems in enforcing a uniform policy, particularly at a time of heavy unemployment. Early in 1849 the EC complained of "the shameful and brutal treatment of our unfortunate fellow-workmen, at present on the road. In many instances they have to travel 2 or 3 days without a farthing of relief, and others have not been able to procure a bed on which to rest their wearied bones".⁷³

In the absence of available funds, branches were usually dependent on the goodwill of local publicans. Thus two pounds were sent to Hull in mid-1849 because the landlady of the club-house refused to advance any more money until the whole or part of her account was discharged.⁷⁴ And the Hull branch was forced to pay only 6d tramp relief in February 1850 "on account of not being able to uphold the present rate of relief".⁷⁵ But by mid-1851 the EC could claim that very few branches were giving less than the rule rate of relief - "We trust that all towns dissenting from the rules, will

see the propriety of following the example set them, and let us no longer be disunited".⁷⁶

Because many early Hull branch records survive, it is possible to chart the slow application of national rules in this branch, but it would not be surprising if their experience was not repeated elsewhere. Thus in January 1852, the branch secretary wrote to the General Secretary as follows:

"There being so many tramps through at present and so few members that we are unable to meet the demands of our landlady. The amount she wants of us this month which she has given to tramps is 19s6d and our income is so small through being so few of us we shall either be obliged to lower the relief or you will have to remit us money to keep it up".⁷⁷ Only three months later the General Secretary had to inform Hull branch "never relieve a certificate, but obtain them and send them to EC, they are illegal". As certificates from the earlier district societies had been outlawed in 1848, this further demonstrates the slow application of uniform national rules.⁷⁸

C. LOCAL AND SECTIONAL COACHMAKING SOCIETIES.

A number of locally-based coachmaking unions existed in the nineteenth century both before and after the formation of the UKSC. Many of them were in London, but there were a number outside, usually based in the bigger cities. Various organisations were reported in Scotland, especially in Edinburgh, from the 1840s through to the 1890s, and a "Scottish Association of Operative Coachmakers" attended the 1875 TUC with a claimed membership of 200.⁷⁹

Outside of Scotland, the main provincial non-UKSC organisation was the Manchester Independents (referred to above), who rejoined the UKSC in 1866. They had 228 members, about 100 of whom had joined since the beginning of 1866, while 55 dated from their original entrance in the UKSC, 3 going back to before 1826. While they had a number of "country" members, the bulk of their Manchester-based membership worked in the local railway shops. Years later they were referred to as the "Railway Coachmakers", and soon after their amalgamation, a separate Openshaw branch was formed for members working at Ashbury's contract shop and the Gorton workshops of the MS&L Railway.⁸⁰

Reference has already been made to the lack of a coachmakers' society in London in the late 1820s and early 1830s. After the 1848 reorganisation of the UKSC, its London branch claimed some 80 members, but only 20 paying members were claimed at the end of 1851. Membership picked up soon after, with 97 in late 1853. By 1855 a Stratford branch in East London had been

formed (presumably based around the Eastern Counties Railway workshops there) and the total London membership was 124. By the early 1870s, the London branch had over 300 members.

In relation to the number of coachmakers in London (see below) this level of membership was tiny. There were, however, a number of sectional societies present in London, about ten operating in the third quarter of the century. The most important was the London Coachmakers' Friendly Society, later called the London Coachmakers' Trade Union (and from 1908 the London & Provincial Coachmakers' Trade Union), which was formed in 1843 and had a continuous existence through to 1919 when it was one of the founding constituents of the NUVB. It confined itself to bodymakers and carriage makers, and its original membership of 15 had increased by the late 1870s to between 150 and 200.²¹

There were two coach painters' societies in London. One was fairly short-lived - the United Coach Painters was formed in 1866, but transferred its 22 members to the UKSC in 1877 after an overwhelming vote of the latter had agreed.²² An older society also existed, as an unnamed London coach painters' society contributed funds to the 1834-35 coachmakers' strike in the north-west. A sectional society also existed in 1861, though the first definite reference to the Sovereign Friendly Society of Coach Painters is in 1862. In the 1890s its secretary spoke of it as "one of the oldest of its kind", while the UKSC Journal called it "a very old society". It is likely therefore that the Sovereign Society dated back to at least the 1830s. In October 1892 the UKSC General Council almost unanimously (only London branch voting for) refused to allow it to amalgamate. By then it had

less than 50 members, most of them old. It had numbered nearly 200 at one stage, and declined mainly through the deaths of existing members and its failure to make new members, finally dissolving in 1894.⁹³

In the trimming branch two separate societies existed. One, reported in 1861, was based as the "Crown" public house, had 93 members in 1868, and was still in existence in 1879. The other, based at the "Globe", which appears to have been called the United Trade Society of Coach Trimmers and Harness Makers, had 47 members in 1868, and was still extant in 1871. It is not clear, though, whether this society had any relation to the "Globe Coachmakers" of the eighteenth century that Cole and Postgate refer to; but given that the Coachmakers' Company also contained harness makers, this is quite possible. Both these trimmers' societies disappeared before the end of the nineteenth century.⁹⁴

The London Society of Coach Wheelwrights, already mentioned, steadily declined in numbers towards the end of the nineteenth century, and its 40 members of 1892 had fallen to 18 in 1909 when it amalgamated with the UKSC.⁹⁵ A London coach smiths' society donated to the 1834-35 UKSC strike, while in 1861, two such societies were reported, one of which had 200 members in 1871, and was still functioning five years later. In 1879, when a coachsmiths' and vicemen's society was established, this was presumably an extension of this smiths' society. This maintained an independent existence right through to the formation of the NUVB in 1919, though its numbers were low, fluctuating around the 50 mark in the 20 years after 1892.⁹⁶ Some more ephemeral societies also existed, but generally the London sectional coachmaking unions either dissolved or eventually joined

the UKSC/NUVB. The only one worth noting was the small "Federal Union", which was set up in 1894 to "take in the unskilled in the coach trade, and likewise, those too old to join the existing societies, as while the present disorganisation exists in London we Society men are only like grains of sand on the sea shore".²⁷

The London societies' membership included "country" members. In 1869, for example, we find that one of the 23 coachmakers working "black" in a Liverpool firm was a member of a London society. In Leamington in 1871, the union affiliation of coachmakers in two shops was: Mulliners - UKSC 17, London societies 4, non-society 4; Glover - UKSC 6, London society 1, non-society 5. It is clear that in disputes, the UKSC needed the support of any London society members. And when a dispute occurred at a Liverpool firm in 1876, the UKSC paid a member of the London coach smiths' society some £9-5s in strike pay to keep him out.²⁸

The largest of the London societies, the LCTU, had the greatest number of "country" members, with an estimated 130 of its total 1903 membership of 350. It was not until 1908 that this union changed its name to the "London & Provincial", signifying the intent to recruit outside of London, but there is evidence of members having joined in the provinces before this date.²⁹

The UKSC, local societies, and non-unionists

In London the proliferation of sectional societies and the weight of non-unionists had its greatest impact. The number of adult male coachmakers in mid-nineteenth century London is given in table 1:3 below.

Table 1:3 Adult male coachmakers in London, 1841-1871.

<u>1841</u>	<u>1851</u>	<u>1861</u>	<u>1871</u>
3,821	4,512	4,855	5,187

In the late 1860s and early 1870s, for which membership figures of most societies exist, about 1,000-1,100 London coachmakers were in trade unions, including the UKSC. This amounts to just over 20% of the total workforce, but is a lot higher than the figure for 1841 which was probably less than 10%. As noted in the Introduction, these figures contradict Cole's assertion about the strength of coachmaking unionism in London during this period. Evidence of the coachmaking trade movements in London (the 1859-60 short time movement and the 1872 9-hours movement) shows how the trade unionists attempted to overcome this problem.

The "United Coach Trades Association" was set up at a meeting of workmen held in July 1859. A few days later, a meeting of delegates appointed by the various shops elected a committee of 23 to meet weekly, while general meetings of shop delegates were to take place monthly. By September, 501 workmen had enrolled; by October 600, increasing to 750 by December. At the December general meeting it was noted that "nearly all the members belonged

to the trade societies". In fact, this figure could not have been far off the combined membership of the societies in London at that time.

The LCTU appears to have taken the initiative. The Honorary Secretary of the Association, Reavely, was an LCTU member, and both he and his fellow-member Cornelius Redlington, who spoke at one of the Association meetings, later took out individual membership of the First International in 1868. Reavely was also later active in the "United London Coachmakers' Nine Hours League" in 1872. The October 1859 meeting agreed to issue a memorial to the employers, who replied that it suggested "impracticable" changes. Some of the leading employers called shop meetings of their men to "test" the feeling on shorter hours. At Peters, for example, a meeting voted 29-110 against the adoption of the memorial, despite there being 50 members of the Association working there. A number of employers did, however, start to reduce hours. The London-based Association's policy was to support any member who was discharged for advocating the shorter hours, but "any member striking work, or inciting others to do so, to gain our object, or behaving in a threatening or disrespectful manner, either to his employer or to his shopmates, will on no account receive any support whatsoever."²⁰

The UKSC took a not dissimilar stance when in 1860 the executive issued national guidelines on gaining shorter hours, but they were prepared to use the strike as a means of last resort. "Begin by a voluntary levy on each man in the shop, to defray necessary expenses Show by your manner you are determined to do an action peaceably, quietly, but firmly, soliciting your employers for the boon, setting before them the example of those who have already granted it, and not allowing one favourable opportunity to

elapse without saying something about it. We would not wish any one to be impetuous, nor to interfere individually But sometimes one man will arise who fancies all the rest asleep, and by his eagerness throws himself out of work. Avoid this, it does no good, and injures the cause guard against strikes; let every other method be tried, and well tried, and fail before you resort to these means - and, before resorting to them, see your way clearly for support."⁹¹

Generally the UKSC preferred the society's name not to be involved in agitation for shorter hours. When members in Manchester (alongside the "Independents") and Leeds gained concessions on hours in 1866, the executive reported that this had been "entirely by their own exertions, without even the name of Society being brought into the question, which will be a stimulus to others to act more on their right to advance with the times than on their right to demand as members of the Society, the name of which might in many instances be entirely left out of the question."⁹²

In the smaller towns the UKSC would usually take the lead in the movement for shorter hours, but in the bigger towns, where there were generally large numbers of non-unionists, and sometimes local societies, the UKSC were usually swept along by events. Thus, in Leamington in 1870, the UKSC was anxious to gain the support of the London societies' members working in Mulliners for a joint campaign for shorter hours on Saturdays. While in Dublin, also in 1870, the number of UKSC members was greatly outweighed by non-members and "blacks", and it was necessary "to be very careful over striking a shop".⁹³

However, moves for a shorter working week from the 1850s to the 1870s could draw in large numbers of non-unionists, as epitomised by the London building workers in 1859 and the Newcastle engineers in 1871.⁹⁴ Similar movements developed in coachmaking. In Glasgow in 1872 a total of about 250 society and non-society men struck for the 51 hour week. At the time the UKSC branch only claimed 68 members, but this was increased in the quarter of the strike to 84; only to fall back to 60 another 3 months later. The hours issue also united the coachmakers of Bristol in 1873, when about 70 UKSC members and about 200 non-members worked together. Again, in Edinburgh in 1876, non-society men and members of the Edinburgh local society, who jointly outnumbered the UKSC there, determined to strike several of the shops for wage increases.⁹⁵

The exception to this was London, which had no significant movement of non-society coachmakers, and also had the longest working week. The unionists in London, although in a small minority, would have had significantly more impact if they had not been split among so many different societies. The UKSC executive argued that this division meant "interlopers of all kinds are to be found working in their shops, which might be prevented were we united in one body, and thus scores of men who have served seven years at the trade, and are now idle, would find employment in place of those who have no right in a Coachmakers' shop." But there were some signs of cooperation, as when the UKSC London branch secretary got the other London societies in 1867 to do all in their power to prevent their members from going to any of the provincial shops recently blacked by the UKSC.⁹⁶

In February 1872 moves were made to get united action on hours among the different London societies, and in May the "United London Coachmakers Nine Hours League" was formed. Once again, this was not a UKSC initiative. From February to August, some 20 general meetings and 8 committee meetings had been held, with 9 different societies represented. Memorials were sent to 300 employers, asking for the 54 hour week, with a 1 o'clock Saturday. A notional deadline of July 1st was appended, but by the time the master coachmakers of London met in June, almost all the large firms had already conceded a 55½ hour week (10 hours a day, and 1 o'clock finish on Saturdays). By August, only 5 firms had given the 54 hours, while a further 40 were operating 55½ hours; with a large number, mainly of the smaller firms, still on 63 hours, the League amended its target to 55½ hours. While it was agreed to ask non-society men to enrol in the League in order to support them in the event of a dispute, nothing more is recorded.⁹⁷

Despite such united action, amalgamation talks with the local societies in London (and Edinburgh) in the early 1870s came to nought.⁹⁸ While a number of small societies dissolved or did join the UKSC, it was not until the amalgamation of 1919 that all the exclusively coachmaking societies joined together in one organisation.

D. THE 1879 CRISIS

The history of the UKSC in the second half of the nineteenth century can be divided into two very distinct periods, separated by the year 1879. Generally speaking, prior to that year, the UKSC had gradually established a position of strength in many localities. Following a long drawn out dispute that year, the UKSC was very much on the defensive well into the 1890s.

The national membership, after a very volatile period immediately after the 1848 reorganisation, grew fairly steadily from around 3,000 in the mid-1850s to over 8,000 in 1878. But the dispute and its aftermath saw this fall by nearly half to around 4,500 in 1882. After a number of years at this level, the total crept above 6,000 in 1896, and 7,000 five years later. The expansion of the motor industry saw a big jump to nearly 9,500 in 1907, followed by a drop to around 7,000 in 1910-1911. This figure marked the low point and membership surged to over 12,000 in 1913, before further dramatic growth in 1917-1919.

The years 1878-79 were marked out by the Webbs as "a stagnation which must rank as one of the most serious which has ever overtaken British industry". While the ASE noted that the employers' response was "irregular attack ... in preference to the development of any general movement by their Associations", and that union managed to defend the 54 hour week, the Webbs reported that "other trades were not equally successful". They argued that 1879 was "a low-water mark of the Trade

Union Movement", with "widespread national organisations .. [shrinking] ... practically into societies of local influence, concentrated upon the strongholds of their industries".⁹⁹ The Coachmakers were very badly hit, with a newly formed employers' organisation leading the assault in the north western bastions of the union. Despite a substantial defeat, membership generally held up in the strike-hit areas, but fell away where the union was weaker but not generally under attack.

UKSC members in Liverpool, Manchester, Doncaster and Rochdale struck in early January 1879 when employers tried to increase the working week from 53 to 56½ hours. As a result, members were locked out in the Lancashire towns of Oldham, Bolton, Burnley, Preston, Wigan and Altrincham, the Yorkshire towns of Leeds, Halifax, Harrogate, Ripon, Scarborough and York, and also Huntingdon. The dispute was eventually closed by the union almost 25 weeks later, at the end of June, when there were still nearly 500 members on strike (just over one half of them in Manchester). The Manchester employers resolved that "each workshop is declared and shall henceforth be absolutely free in respect of the person or persons to be engaged, and as to wages, piecework, and number of apprentices".¹⁰⁰

The Bolton branch claimed that after the strike, the employers "refused to employ any man whom they suspected of being in the Society, and carried out a perfect system of boycotting, by writing after every Society man that they could hear of being in employment, and getting them discharged". But there was a limit to how far the employers could pursue this strategy, even at a time of generally depressed trade. What

was probably more disturbing for the UKSC's officers was the reaction of the membership to the levies imposed on them from the beginning of the strike through to August 1879. When the levies stopped, many members were substantially in arrears. This compounded the already precarious financial situation, which meant that unemployment, superannuation and funeral benefit were halved, and half the towns were closed for tramp relief. Many "lost faith in the Society, they felt certain it would collapse". Membership plummeted in 1879 and 1880, not showing any growth until 1882, in which year those still in arrears with levies were given 12 months to pay, failing which they would be suspended from all benefits until 1 month after they were clear. By this time the main damage had been done, and many ex-members found they were either debarred from rejoining because of age, or they had already wasted several years of superannuation contributions for it not to be worth their while.¹⁰ The impact on many areas is investigated in chapter 3.

The role of employers' organisation was crucial in the dispute. Two years afterwards, a Bolton employer confessed that before the Northern Counties Master Coachbuilders' Defence Association had been formed (in 1878¹⁰²), "we in the north were tied hand and foot. Special shops had to pay special wages, irrespective of the ability of their workmen. Certain men had to do certain work. In no case was piecework permitted when the UKS were strong enough to prevent it. we got men, or we did not get them, as it suited the temper or policy of the 'town secretary'. In a word we were not masters in our own shops."

He continued, "The Defence Association has completely altered this. Now we can employ whom we like, pay by merits as a consequence there has not been a single strike - a thing unprecedented in my experience - for more than 12 months".¹⁰³ The scale of the employers' victory is underlined by the comment of a London employer in 1902, when he argued that the Defence Association had "crushed" the UKSC, "a blow from which this union has never really recovered".¹⁰⁴

Prior to 1879, many branches had various "privileges" formally embodied in by-laws or working rules; for example the large Manchester branch had a minimum wage for each branch of the coachmaking trade, and many branches enforced an apprenticeship ratio. But all this was lost as a result of the dispute.¹⁰⁵ A further consequence of 1879 was that the gradual elaboration of trade policy in the union's rule book abruptly ended, with most trade policy actually removed from the union's official rules until it started reappearing in the 1890s.

It would be wrong, however, to exaggerate the UKSC's strength before 1879. The craft tradition of "blacking" shops that failed to follow union rules was carried out with regard to the realities appertaining to the individual situations. From 1859 the rules stated that "any person belonging to the coachmaking trade" (ie not just UKSC members) working in a struck shop or blacked shop automatically became black themselves. All such blacks, past and present, were "regularly published in Quarterly Reports until they make satisfactory terms with the Society". A total of 162 blacks in 1859 had increased to 476 (in 74 shops) some ten years later. After 1872, because of the 1871 Criminal Law Amendment

Act, the lists were not published, but were still produced for branch officers' use.¹⁰⁶

While such blacking sometimes worked, often it did not, demonstrating the UKSC's inability to recruit or hold sufficient numbers of coachmakers. Thus, in 1860, a large railway contract shop in Birmingham had its blacking lifted, despite the grievance remaining (see chapter 3), while the 1866 Delegate Meeting later ruled that "EC shall have power to open any black shop after it has been black 2 years". Using this new rule, the EC opened shops in Wakefield and Grantham, for example, the next year "as we have been repeatedly asked by the neighbouring towns, and consider it useless to keep them closed any longer".¹⁰⁷ But even this new rule was considered too restrictive, and in 1869 the EC argued "we gain directly very few strikes Although we do not often succeed in getting the employer to acknowledge defeat, few employers will venture on a strike a second time". They therefore proposed that three quarters of a branch's members could, with EC approval, vote, at any time, to open a blacked shop; and this was accepted by a large majority in a national vote.¹⁰⁸

Although UKSC branches were limited in their power over local employers, the coachmaking trade was not swamped by cheap labour, either unskilled adult or apprentice. From 1848 and possibly before, the UKSC rule on apprentices requested employers not to employ more than one apprentice to 3 journeymen in each branch of the trade, sons of coachmakers excepted. George Howell argued in the late 1870s that the UKSC had "to some extent been able to enforce [these] restrictions".

However, this was mainly because "a larger number of boys could not well be employed on account of the skill, care, and nicety required of the workers, in all branches of the trade". This will be further examined in chapter 2. Although disputes did occur sometimes over the issue, these were not "numerous or important".¹⁰⁹

But UKSC officers had to be continually alert, and were forced to tighten up apprenticeship rules in the 1860s. In 1862, for example, there were deputations to four Liverpool employers over the number of apprentices; a Congleton shop employing 14 boys to 12 men, discharged those the EC delegate singled out; and in Belfast, a shop employing 14 men and 19 boys was waited upon, with the result that 3 boys were removed "so it is a little gain". Undoubtedly, this tendency was sufficiently advanced for the 1866 Delegate Meeting to rescind the exemption for sons of coachmakers. The new rule was enforced, as when a Liverpool employer set on an extra apprentice in 1867. "Under the old rules Mr. Stokes enjoyed the privilege of having a number of apprentices who were sons of coachmakers; which privilege being now done away with, it becomes necessary to reduce the number as opportunity occurs".¹¹⁰

Rules on apprentices also disappeared in the 1880s, and a Royal Commission survey in 1885 of 20 UKSC town branches found that three quarters of them had no effect on the numbers of apprentices.¹¹¹ More generally, General Secretary John Waldron told the 1892 Royal Commission that since 1879 "I should not think we have spent £150 in grievances, and they have been merely isolated cases". But, despite the massive retreat from their earlier more aggressive stance, the UKSC still

retained a solid core of membership in the north west. Waldron informed the Royal Commission that 90% of coachmakers were in the union "in Liverpool and Manchester, and the greater part of Lancashire and Yorkshire", though "in a scattered trade like ours there is a very large percentage never in the Union", it being "the other counties, West Midlands and South, where the great number of non-society men are".¹¹² The historical weakness in London has already been noted, the Booth survey in the 1890s confirming that "neither separately nor collectively are the Societies strong, and the employers are hardly conscious of their existence".¹¹³

While Price has argued that a major non-industrial relations explanatory factor for nineteenth century trade union membership was the friendly society benefits offered, he does not see them also as an inhibiting factor. The UKSC experience shows that when membership fell in 1879-81, it was mainly a result of the friendly benefit side becoming less attractive in relation to increased contributions. When trade picked up again in the late 1880s and early 1890s, large numbers of ex-members were debarred from rejoining because of their age, and this must have been a more general experience across craft unions. From his study of the building industry, Price claims "it was one of the characteristics of union membership to fluctuate wildly from year to year and from place to place". A study of nineteenth century coachmaking does not support this particular contention, but gives credence to his more general point that "the whole question of relations between union and non-union men is one that is rent with ambiguity and complexity which makes any generalisation at best uncertain".¹¹⁴

CHAPTER 2. THE COACHMAKING TRADE.

A. EARLY COACHES AND COACHMAKERS

Like its eventual successor, the motor car, the coach was in a constant state of evolution. It follows, therefore, that the "skills" necessary to construct and finish the coach also changed throughout its long history.

The first coach (ie, where the roof formed part of the framing of the body) made in England was reputedly built in 1555,¹ and it is claimed that by about 1580, they "had come into general use among the wealthy classes".² By the first years of the seventeenth century, coaches were "straight-bottomed, open at the upper sides or quarters, which were furnished with curtains of cloth and leather; at first they were tied on, and would roll up when air was required; they had no doors, but were entered on either side by a moveable rail, over which a leather screen was hung."

The next major development was a curved bottom to the body, with a wooden door half-way up it. There seem to have been no glass windows nor complete doors before 1650, while the lower parts of the body began to be panelled in wood, instead of being covered with cloth, from about 1660. Carving, gilding, and painting were introduced along with wooden panelling. Then, about 1670, steel springs started to be used; as these

meant less destructive wear and tear, the amount of timber in carriage construction could safely be reduced.³

In 1747 the coachmaker's business was described as follows: "to make the Body of the Coach, and all the Carriage except the Wheels He is a carpenter as he frames the Body and Carriage of Wood; a Taylor (sic), as he lines the inside with Cloth, Silk, Velvet or other Materials, to which he is obliged to use his Needle; and he is a Shoe Maker as he covers the Top and Sides with Leather, in which he is sometimes obliged to use his Awl."⁴

His work was then finished by the tire-smith, wheeler, carver, and painter. The term "coachmaker" therefore still only included at this time what later became three separate branches of the trade - the bodymaker, the carriage maker, and the trimmer. It is not clear, though, whether the trade had already split into these three separate components by the mid-eighteenth century.⁵ The determining factors of this initial division of labour would have been the complexity of the coaches being constructed, the number of journeymen employed by a master, and the amount of work on hand at any particular time. It has been claimed that a Scottish coachmaking employer, named John Home, went to London in 1738, received "instruction" in the trade, and returned to Edinburgh with a supply of tools. Allegedly, "there had hitherto been no division of labour in making a coach" (at least in Scotland) and Home "allotted to different workmen the fashioning of the various parts of the carriage. Thus the men became expert at their parts".⁶

Whatever the actual sequence of events, the division into three separate trades had certainly occurred by the beginning of the nineteenth century. And the trimming work itself would often later be executed by separate individuals - the leather work being the specialism of the "budget" or "black" trimmer, while another would do the cloth work.⁷

Of the other supporting trades, the coach carver was a historically transitory figure, as carving work generally died out.⁸ The other three trades, however, were central to the nineteenth century coach. Coach-wheeling generally remained a branch of the trade carried on in separate establishments in London. This originated with the Charter given to the Wheelwrights' Company, which organised coach-wheelers (who made coach wheels) and cart-wheelers (who made the whole of carts). Outside London, coach wheels were made on the coachmaker's premises.

Coach painting was also carried out separately in the eighteenth century in London, and there is evidence to suggest that coach painters in provincial towns were also employed in separate establishments.⁹ According to George, in eighteenth century London, "coach-painting and sign-painting were both trades and arts. It was the custom to apprentice budding artists to sign- or coach-painters".¹⁰ Initially coach painting was very elaborate and lavish among the wealthier classes:

"The panels had beautiful paintings upon them; sometimes the whole was the subject of a picture in which a landscape and figures appeared, sometimes surrounded with a continuous ribbon border of flower work, or

the panels were divided into squares or diamonds of diaper work, each little partition bearing a flower or device".¹¹ "For the decoration of the panels the services of artists of the highest order were engaged. Smirke, the Royal Academician, served his time to Bromley the heraldic carriage painter of Lincolns Inn Fields. Monamy, the marine painter of the latter part of the eighteenth century, painted the carriage of the ill-fated Admiral Byng; and Charles Cotton R.A. decorated coaches with armorial bearings."¹² And in the mid-eighteenth century, the artist Watteau also frequently painted coach panels.¹³ However, lavish painting, like carving, had mainly died away by the early nineteenth century, and coach painting was done on the coachmaker's premises.

The other main branch of the trade - coach smith work - was also carried on separately in the eighteenth century. Again, there were important changes in the material used for parts of the coach. As Adams notes, "The name axle-tree at once denotes the substance originally employed for it - viz. wood". Similarly, it appears that wood was sometimes used as a primitive form of spring.¹⁴ A licence for the invention of "axeltrees of iron" and "springs of steel" was granted in 1626; but steel springs did not come into normal usage until 1770.¹⁵ In London, "tire-smiths" or "tyre-smiths", so named after the iron tyres used on wheels, were employed in the eighteenth century in making all the iron-work for waggons, carts, and all other kinds of carriages, rarely doing anything else. Tyre-smiths generally employed "the best hands in the Smith Trade", while of their work "the nicest piece ... is Springs."¹⁶ As the division of labour increased, one part of the smith's work became the specialised trade of the "viceman", whose job was to

"file and smooth the work from the rough marks of the hammer, to fit joints and finish screw-bolts and nuts".¹⁷

Adams claimed in 1837 that "few carriage builders carry on many branches of work on their own premises; none carry on all the branches, for it would not be worth their while on a small scale, and on a large scale it would be too enormous an undertaking".¹⁸ This may have been generally true in London, but in the provinces, apart from varying amounts of bought-in ironwork, the seven main branches of the trade were usually employed under the same roof, though in separate shops. Unlike the sectional societies discussed in chapter 1, the UKSC claimed that its "first principle is a recognition that the painter and trimmer is as essential as the bodymaker or the smith",¹⁹ and it acted on this principle. Only one list of UKSC members and their trades has survived. Compiled in 1860, it is broken down in Table 2:1

Table 2:1 Breakdown by trade of UKSC membership, 1860²⁰

	<u>Trade</u>	<u>Number</u>	<u>Percentage</u>
Woodworkers:	Bodymakers	854	21.8%
	Carriagemakers	157	4.0%
	Wheelers	373	9.5%
	[Sub-total:		35.3%]
Metalworkers:	Smiths	665	17.0%
	Vicemen	311	7.8%
	[Sub-total:		24.8%]
Painters		1,011	25.8%
Trimmers		507	13.0%

It is clear therefore that the UKSC was a multi-trade society. Only one other partial breakdown exists for national membership, in 1911, when out of about 8,000 members, 3,100 (about 39%) were woodworkers, and 2,700 (about 34%) were painters, meaning proportionately less metalworkers and trimmers.²¹ Carriagemakers and wheelers were absent from railway carriage and tramcar work, as well as motor vehicles. Coachsmiths and vicemen/coach fitters were generally also displaced in the first two categories of work, though not for a considerable period in the last. Consequently, from the middle of the nineteenth century until the beginning of the first world war, the proportion of bodymakers (and the related trade of coach finishers) and painters in the UKSC increased relative to the other traditional woodworking trades and the metalworkers. While there was less trimming in rail and tram work, the rise of motor cars reversed the relative decline in this section.

How representative the UKSC was of the different branches of the trade can only be estimated from parliamentary wage returns. The lists in table 2:2 overleaf are not strictly comparable, as the Liverpool figures have disproportionately more wheelers and smiths, suggesting that wheelwrights' premises were included. But, allowing for that and discrepancies in the category of labourers and boys, then the number of woodworkers in the three cities of London, Liverpool, and Dublin, was roughly of the same order as painters, and slightly more than the skilled metalworkers. Despite variations in the amount of machine made wheels and bought-in ironwork, as well as differing types of establishment, it appears that the UKSC's national membership roughly reflected the actual proportions of different branches of the trade.

Table 2:2 Breakdown of coachmaking trade by occupation, 1877-1883²²

	<u>London</u>	<u>Liverpool</u>	<u>Dublin</u>	<u>Dublin</u>
	<u>1877</u>	<u>1880</u>	<u>1877</u>	<u>1883</u>
Bodymakers	13	8	13	16
Carriagemakers	4	8	5	4
Wheelers	3	16	3	3
Smiths	13)	16	7	7
Smiths' Hammermen)	12	9	7
Vicemen	5	8	13	8
Painters	26	24	17	19
Trimmers	14	8	16	13
Labourers/Helpers/Boys	12	-	17	21
Others	10	-	-	2

Sections B and C will analyse the varying levels of skill and division of labour in the wood, iron and painting trades in "private" coachmaking. To demystify any mistaken assumptions about the pleasantness of actually working at the craft, the physical working conditions in coach painting will be explored. Finally, section D will investigate the piecemaster system, which in London led to many skilled men being denied the best skilled work, and was a major factor in the weakness of coachmaking trade unionism there.

B. THE WOOD AND IRON TRADES

(1) The Ironworkers

The amount of iron used in building a carriage was "enormous": "It is used in the cast form for the boxes of wheels; and in the wrought form it is used in almost every possible shape, from the wheel tire, the axle, the crane, the bar, the stay, the hinge, the plate, the bolt, up to the most minute screw and nail". There was also "great consumption" of steel for the manufacture of springs.²³

As noted in section A, specialist coach-smiths existed from at least the middle of the eighteenth century, it being observed early in the nineteenth century that "ordinary bred smiths are not, without a good deal of practice, fit to be employed by coachmakers except in the coarser parts". But for the best results, the trade was subdivided - "some workmen being constantly employed in making springs, others at the axle trees, others at the steps, some at the iron work upon the wheels, some at the different plates and stays for new carriages, and others at repairs upon old work of all kinds."²⁴ The actual amount of sub-division depended on the size of coachmaking firms, and the amount of ironwork purchased ready-made. Thus, at Huttons in Dublin in 1824, with 58 smiths, an extensive division of labour probably operated.

While the cheapest axle consisted of a square bar of iron being rolled to shape between mill rollers, these were liable to break. The

best axles were made by welding together several flat bars of iron forged into shape under a hammer, a process known as "faggoting". This process was still in the 1830s being "imperfectly executed by hand labour, with a destructive wear of human life". Adams equated the "considerable skill and strength" required by axle-tree smiths "to unite large masses of iron at a welding heat, and to reduce them to accurate forms", with the work of anchor-smiths, one of the trades singled out by George as putting "an enormous strain on human endurance". Hand-forged axles, however, produced "a round shaft with a surface of irregular texture and very unequal transverse strength". When this method was used for the production of axles for the earliest railway vehicles, "they often snapped in service". Attempts to make axles from rolled sections, shaped like orange segments started in 1835, and in 1838 the Patent Shaft & Axletree Company was established in Wednesbury, Staffordshire, concentrating on the production of railway axles.²⁵

In the late eighteenth and early nineteenth century, other advances were made in axle manufacture, with patents being taken out on two types of axle lubricated with oil - one the "mail" axle, so named as it was first used in mail coaches, the other, "Collinge's Patent" after a Lambeth manufacturer. Collinge's factory in fact specialised in both carriage wheel boxes and axle-trees, for which they also had patents.²⁶ The development of various new techniques in axle production led to the establishment of a number of specialist coach ironwork firms in the Midlands. The oldest such firm surviving in Birmingham at the end of the nineteenth century had started producing axles in 1826. In West Bromwich alone, some 18 such firms were operating in 1851, of which 5 specialised

in railway work.²⁷ But there was some resistance to buying out ironwork, and G.N.Hooper commented in 1873 that it was surprising that the machine-forged "excellent carriage axles" of a late Sheffield firm had not been more generally adopted.²⁸

While Adams suggested that axle and spring making was not normally done on the coachmaker's premises, larger coachmaking establishments tended to continue making their own axles and other ironwork, as was the case at the London firm of Pearce & Countze in the 1840's and Holmes of Derby in the 1850's where some smiths were solely engaged on axle or spring making.²⁹

"Springs in locomotive vehicles", were defined by Adams as "the elastic substances interposed between the wheels and the passengers or load, in order to intercept the concussion caused by the wheels revolving on an uneven surface". Steel springs were made by several steel plates of diminishing length being hooped together with an iron hoop shrunk on hot, and riveted through at the point of fulcrum. The main skill in spring making lay in tempering the steel correctly, which appears to have been attained only by long practice. Spring-makers' work required a viceman to file all exposed parts prior to hooping and riveting. Later, it appears that the rivet was replaced by a bolt, which also became the viceman's responsibility.³⁰

Apart from axles and springs "a large quantity of expensive iron-work" was also used in carriages, the expense being due to "the highly skilled labour which is necessary in preparing it". The most complicated

work was involved in making the "loops" which were used to suspend the body. These were "curved in many opposite directions, ... tapered, and irregularly formed every way, yet requiring to have bearing bolts accurately adjusted, and sundry contrivances for affixing iron-work to them, and all this without a single straight side for the maker to work from". The bulk of the remaining ironwork consisted of "stays" (ie brackets), "plates" (which were bolted on to the entire length of wooden surfaces requiring strengthening), "hoops" (to secure timbers together side by side), "clips" (open hoops secured by nuts and bolts), "steps" (to allow access into the carriage), "bolts" of varying sizes, and a number of other items.³¹

"Vicemen" generally worked in conjunction with the coach-smith, and required "much skill and practice in filing, to enable them to work true, which is absolutely necessary in axles". As Adams noted "Were these men taught to work in wood first, as is the case with millwrights, skill would be more frequent amongst them than is the case at present". Adams refers to vicemen as a category of coach-smith,³² and it is likely that such workers originally served an apprenticeship as a smith. UKSC rules from 1857 to 1866 specified "No viceman to be allowed to join the Society unless he has served his time as a smith", and the Webbs later described them as "unsuccessful" smiths.³³

In 1876, the UKSC rulebook was altered to include "vicemen or coach fitters", in order "to suit more particularly those in railway works, where, in some cases, through being termed vicemen, they do not receive as high rate of wages as if they had been known as fitters".³⁴ But they

were generally referred to in the private trade as vicemen, until the mid-1880s at least.³⁵ The 1889 UKSC rulebook dropped the term vicemen altogether, in favour of (coach) fitters, though, in Scotland, they continued to be known as vicemen.

The viceman's general level of skill was still being questioned at the end of the nineteenth century when it was observed that they "might . . . endeavour to attain a somewhat higher standard of accuracy in their work. It is not expected, nor is it necessary, that they should work to a one hundredth of an inch, as fitters in some trades have to do, but one too frequently observes carriages of which the ironwork would not bear a critical examination by a person accustomed to other classes of fitting." The actual coach-smith's role was very important, as "some smiths produce forgings of a far higher character than others, and the ironwork made by one man may not require half the filing needed by work produced at an adjacent forge". But there was "absolutely no excuse for a vice-man who gives the ironwork a coat of lead colour in order to hide bad work or defects that have never been touched by his file".³⁶

The other figure in the coach smithy was the "hammerman" (known as a "smith's striker" in some other trades³⁷). His job was to aid the smith in his work "with the sledge hammer, when heavy blows are required to reduce the metal in size or form; they also blow the bellows and make up the fire - in short, perform the office of labourers". As they worked in conjunction with a smith, they were dependent on him for employment. If the hammerman attempted to do any of the smith's work in the latter's absence, this would cause friction and lead to their discharge. "Thus,

the hammermen live in a position from which they are forbidden to emerge, even if they possess the necessary skill".³⁸ Despite proposals for their admission to the UKSC at the 1913 Delegate Meeting, they were debarred from membership until the NUVB was formed in 1919. Not only was this rather late in the day, as coach smith work was in decline, but also out of line with the Associated Blacksmiths Society, which voted to admit hammermen in 1912.³⁹

(11) The Woodworkers

Bodymakers, wrote Adams in 1837, were "very skilful joiners, using several kinds of wood, and working up many forms in which there is not a single plane surface." They had to "make correct joints at every variety of angle" and "resort to every mode of uniting" their materials. This meant using the wooden joints of "the tenon and mortice, the scarf, the lap, the groove" as well as "the glue joint, the bolt, the screw, and the nail".

Sixty years later, very little had changed - "The coach body-maker uses a variety of framing joints that are rarely seen in either joinery or cabinet-making, and it is in the highest degree necessary that he should know how to make a framed structure so that it may offer the greatest possible resistance to the strains or weight it may have to bear. Unlike some other workers in wood, the body-maker must secure his joints from the inside so that they shall not show through the paint and varnish. They must be accurate, and the grooves must not be too large for the panels, otherwise the mouldings will soon be rotted by water

lodging in the open spaces." In addition to this, it was necessary that "every joint should be truly fitted and tightly screwed" or the combination of weight and movement when the coach was in use would lead to rattles, creaks, and vibrations.

In Adams's day, it was estimated that a bodymakers' tools were worth from thirty to forty pounds, significantly higher than other woodworking crafts such as cabinet-makers, coopers, and the later nineteenth century trade of patternmaking. In the 1890s this tool kit included five types of wood saw, eight sets of planes, three hammers, a mallet, axe, and adze, as well as routers, chisels, brace and bits, screwdrivers, squares, gauges, bevels, compasses, and innumerable other necessities.⁴⁰

The carriagemaker, who made the undercarriage, required less skill than the bodymaker. "Their work is heavy, and requires great truth in all the framings; but the lines are on a larger scale than those of the body-maker, and therefore slight inaccuracies are not so perceptible". Much of the carriagemaker's work was carried out in conjunction with the coach smith and/or viceman, as various parts of the undercarriage required hoops, stays, and plates attaching at different stages in its production. The bodymaker also handled metal, as the body was strengthened in various places by plates; in particular, open bodies were heavier than closed ones because they required a heavy bottom plate or "body plate" to stop the body altering shape.⁴¹

By comparison, the other main woodworking branch of the trade, wheeling, was simplicity itself. The three main wooden components of the

wheel were the nave (the centre), the spokes (the radii), and the felloes (the circumference). The wheeler's job was to prepare and unite the three. The spokes were attached to the nave by mortice and tenon joint, then shaped by a special implement known as a "spoke-shave", and attached to the felloes by a cylindrical tenon being made on the end of every spoke to fit into a drilled hole in the felloe. The felloes were united together by dowels, and the spokes finally secured by wedges inserted in their ends. There were, though, a number of peculiarities in the construction: the hind wheels, being larger, had more spokes than the fore wheels; the spokes' positions in the nave alternated, with one half nearer one end of the nave, the other half nearer the other end, to give strength; and finally the wheel was "dished" (ie the line of the wheel from its top, through the nave, to its bottom, was concave on the outside), also to give strength. Finally an iron tire was heated and put on; its shrinking compressed the wheel. The tire was secured by iron pins driven through tire and felloe, and riveted inside the felloe. The nave was also further strengthened by iron hoops.⁴²

(iii) The limitations of machinery

Samuel has demonstrated in great detail the limited strides that mechanisation made in nineteenth century British industry generally, and private coachmaking was no exception. Among the factors responsible he highlighted the "crude and indiscriminate" nature of machinery, its cost compared to alternative sources of power (usually human), the cost of coal in southern England being double that in the northern manufacturing

districts, the irregular and limited demand for many products, and the changing tastes and fashions in some.⁴³

His analysis systematically echoes the points raised by Adams when discussing the role of machinery in carriage building in 1837. Adams argued that "carriage building still remains one of the arts to which steam and machinery have not been directly applied to facilitate construction and produce cheapness". There were a number of reasons: it was "to a certain extent an art"; there were not enough purchasers "to produce a regular manufacturing business; ie a repetition or copying of certain established forms"; carriages were "articles of fashion and fancy", and "changing fashions in a limited demand will not pay for the outlay of machinery"; and they were "still in a state of progressive improvement".⁴⁴

In the mid-1870s, it was still rare for two carriages to be exactly alike, and in 1890 one coachbuilder remarked "owing to the numerous sizes and great variety of design, even the very largest establishments can only place a limited number of any carriage in hand at one time".⁴⁵ But much earlier in the century when standard design stage coaches were being produced, they were almost "entirely the result of uncertain handicraft labour of various degrees of skill".⁴⁶ The same appears to have been the case with mail coaches.⁴⁷

The main reason for the absence of machinery must have been as Adams noted: "as the forms of carriage timbers are for the most part irregular, machinery has not yet been introduced for the purpose of

sawing them". However, for the production of wheels, he thought they were essential. The traditional method of making wheels by hand meant that "scarcely any two wheels are alike To get them at all accurate, it is necessary to employ very skilful workmen", and that was expensive. There was another problem with hand labour - "a workman may put his work badly together, and there is no means of detecting it except in practice Unless the master watches every wheel while the spokes are driving, he can only depend on the good faith of his workman". The conclusion was clear - "there is no remedy for this evil except substituting machines for men's hands. The machine, if it cuts true once, will cut true always. Every piece of wood in a wheel ought to be shaped by machinery". This was possible, as block-making machinery had been in operation at the naval dockyard of Portsmouth (and probably also Chatham) since 1808, and involved various sawing, boring, mortising, shaping and other woodworking machinery.⁴⁸

By the mid-1850s, wheel-making machinery had been in use "for several years". There was, however, one important drawback. Hand-made spokes were split and chopped into shape "in order that the grain of the wood may run from end to end of the spoke, and give its utmost strength; were they sawn, it is possible the saw might not always follow the grain of the wood, and in that case the spoke would almost infallibly break when in use". G.W. Hooper, a very knowledgeable London coachbuilder, believed it to be a "disputed point", at that time, as to whether machine- or hand-made wheels were best. "It may, I think, be conceded that good wheels may be made by both means".⁴⁹

The Holmes factory in Derby had, in the mid-1840's, installed a steam engine, partly to get work finished "with greater accuracy and expedition". But because of frequent changes in fashion, they had to decide on which parts it would be advantageous, and then to contrive suitable machines. By 1850, the steam engine powered circular saws for cutting wood, a lathe for turning both wood and iron, a tenon-cutting machine, and, specifically for wheel manufacture, a felloe machine and a spoke machine which could produce 300-500 "perfect" spokes a day.⁵⁰

A few years later, Holmes was using machines for "wood sawing and turning of every kind", and for "drilling, tapping and screwing bolts and nuts, grinding the spring plates and iron work". A pair of carriage wheels could now be made in 2½ hours. He was about to replace his original steam engine by two of much greater power. It was noted at the time that "The cost of machinery was considerable, and the space required for it and the expense of fuel, would probably prevent its application with immediate advantage to the London coachmakers".

G.N.Hooper also claimed that as there were comparatively few parts of a private carriage to which machinery could be economically applied, the price of coal in London prohibited its use there. To pay for the outlay necessary, the machinery had to be kept in constant use, "if not, hand labour was the cheapest".⁵¹

In the mid-1870s in London, machinery was still "chiefly confined to patent-wheel factories. We also use a few steam-driven saws, some paint-grinding mills worked by hand, and drilling and punching machines". Outside London, wood-shaping machinery was used in Derby, Newcastle,

Nottingham, Worcester and some other towns. This meant that in London, it still took "from two to three months in building a brougham, of which at least five weeks are consumed simply in preparing the wood and iron work, a period which might easily be shortened by machinery".⁵²

However, the relative costs of machinery and labour (and possibly fuel) seem to have shifted soon afterwards, as the London coachbuilder, Lucas, (admittedly with its workshops at Brixton, away from central London) installed machinery in the late 1880's. A band saw cut the wood out roughly before a "Double Spindle shaping" machine was used for more accurate work, costing "very much below what would be involved in performing the same work were manual labour alone resorted to". Planing machines could plane panels, boards, or planks, varying from one-eighth of an inch to nine inches thick. A boring machine could drill holes of any size in any position in any piece of wood, while the firm also possessed a drilling machine for working in iron and steel.⁵³

Elsewhere, one Wolverhampton coachbuilder was reported in 1891 as using "all the most improved appliances".⁵⁴ But the Liverpool-based UKSC General Secretary believed that, apart from railway shops, only "some of the larger private shops have a little machinery, such as sawing machines and drilling machines".⁵⁵ This would change markedly with the development of the motor car (see chapter 4).

The railway shops, however, were already much more advanced. Railway carriage bodies were, in effect, huge "wooden boxes" (see chapter 3), and were standardised to some extent. Consequently, the application of

woodworking machinery was not only feasible, but it was probably also essential. Many shops had such machinery in use in the 1860's, if not before. At Ashbury's contract shop in Manchester, it was noted that there was "scarcely anything left to hand labour, as far as the cutting and preparing the wood is concerned, all parts being fitted together in the same state in which they leave the machines".⁵⁶ While at the Oldbury works, steam had almost totally superseded hand labour in the sawmill, and there was "every conceivable appliance for saving manual labour" when preparing the wooden components.⁵⁷

These developments were not just confined to the contract shops in the 1860s, but were also found in railway company workshops. At the North British Railway's works at Cowlairst in Glasgow, "logs ... are cut by vertical and circular steam-saws into planks of the required dimensions". After drying, they were taken to "the cutting-out shop, where they are planed, moulded, morticed, tenoned, and bored by machines. Every piece is fashioned according to a standard pattern".⁵⁸ By 1898, the Midland Railway carriage works at Derby had 138 machines for mortising, tenoning, boring, planing, grooving, band-sawing, carving, turning, dovetailing, panel-planing, sand-papering, and so on.⁵⁹

Finally, a note on the trimming branch of the trade. G.W. Hooper observed in the mid-1850s that the various attempts to produce a machine for sewing the leather needed for carriages and harness had been unsuccessful. They could not be adapted to use the strong waxed thread necessary, and they did not draw the stitches sufficiently tight. Nearly

twenty years later it was reported that these "difficulties" were "being overcome". And by the early 1880s there were claims that a wax thread sewing machine had been successfully adapted. It is not possible to estimate to what extent these sewing machines were used, though it is clear that their slow adoption in the related trades of saddlery and harness was in no small amount due to resistance by workers, and fear of such resistance by their employers.⁶⁰

(iv) Limitations of the Craftsman

Given the extent of handwork in coachmaking, it is necessary to emphasise that while some craftsmen had a very high level of all-round skill in their particular trade, a large number were much more limited. William Bridges Adams clearly exposed the limitations of craftsmen early in the nineteenth century. Born in 1797, he was "brought up" to the "art and mystery of coachmaking". The "mystery" was prominent in his thoughts when he recounted how he "acquired the common amount of routine skill in imitating certain prescribed forms", but "as to the principles of the art, - as to the mode of originating the forms, he was left in utter ignorance". That was not all, as "in fact, those to whose instruction he was confided were as ignorant as himself. Had the patterns of the factory been destroyed by accident", he speculated, "the business must have stopped, unless external talent had been brought in to renew them".⁶¹

This situation had not changed significantly by the mid-1850s. Hooper argued that while "each mechanic should have some knowledge of drawing

to facilitate his work, and to enable him to prepare his patterns", the reality was that they were "almost entirely dependent" on their foremen or employers for such assistance.⁶² In the 1880s there were complaints that "a strong, active, young man, just out of his time, who can handle his tools well, can make a mortice, cut a tenon, put in a panel, hang a doorIn nine case out of ten he has never had the opportunity to make a drawing or to make the cant of a drawing, his lengths and bevells are given him by the experienced bodymaker for whom he works".⁶³

And even more damning criticism came near the end of the century from a teacher of City & Guilds classes, who observed of bodymakers, "I have seen and worked with men, and good men too, that could only make a good brougham or landau; any other body they were lost with. There was no fault in their ability, but they had not had the opportunity of gaining experience in other forms of construction". Although the landau was considered "the most difficult body to construct", this did not compensate for lack of wider experience.⁶⁴

(a) Apprenticeship and Improvership

The experience of work on a variety of types of construction and, especially for bodymakers, the ability to be able to read drawings, depended on the quality of the apprenticeship, and then, either where the finished apprentice moved on, of the subsequent "improvership", or, where he stayed, the extent of sub-division of labour in his workshop.

Disposing of the last point first, apprentices were more likely to stay in the larger firms, because they employed proportionately fewer of them; but the division of labour would be greatest in these. If it is accepted that "the apprentices' opportunity of learning from the old experienced workmen the many trade 'wrinkles' acquired during a lifetime, ceased with the introduction of a subdivision of labour",⁶⁵ then this must be part of the explanation of low levels of skill.

Apprenticeship generally in late nineteenth century industry has been studied by More, who has argued that where genuine training was provided, there was a practical limitation on the proportion of apprentices employed. Too high a proportion would mean inadequate training as, irrespective of any union sanction "journeymen covertly refused to train excessive numbers of apprentices properly".⁶⁶

But even where journeymen did train excessive numbers, it was an expensive business for the employer. As the Dublin UKSC branch secretary complained in 1885, "If a workman has two boys to look after, his time is lost in instructing them, and in most cases rectifying their mistakes, and what must be the loss sustained by the employer where there is a large number of boys!". Where it did occur, the apprentices "in most cases ... turn out inferior workmen".⁶⁷ However, in coachmaking, as argued in chapter 1, the "overstocking" of apprentices was in practice limited to a small number of employers.

Other explanations therefore need to be sought for the generally low quality of much of the training given. More has claimed "there is no

evidence that there was widespread exploitation of apprentices, in the sense of using them as cheap labour to do elementary work". However, he does admit that some apprentices, placed on repetition work, for example, left for other workshops in order to learn more, while others might leave in order to earn more.⁶⁸ This appeared to happen to some extent in coachmaking. When indenture duty was reduced from £1 to 2s6d in 1853, the UKSC executive hoped it would "materially assist to the binding of a regular, but limited, number of apprentices" as "those unbound often prove a direct injury to both employers and operatives by shifting from shop to shop".⁶⁹

Coachbuilding employers themselves admitted that one attitude towards an apprentice was to employ him "on such simple work as he can accomplish at a profit rather than to run the risk of teaching him the more difficult parts of the trade as quickly as he can master them, and so render him a valuable acquisition to some other employer who, having incurred no expense in teaching the youth, can well afford to pay him higher wages". This seemed to be a problem in the bigger towns where there were a number of competing employers. In London, which was exceptional in its low number of apprentices, there was the further factor of the piecemaster system - "engaged nominally by the firm, boys are in reality employed by the workmen, who, being paid by the piece, are consequently tempted to hand the lad such work as he can accomplish at a profit and with the least possible supervision".

In the smaller towns, with fewer immediate alternative employment opportunities, apprentices were more likely to stay and also to receive

a wider all-round training due to the variety of work. Many then gravitated towards London "the seat of the carriage industry" which "depends upon the provinces for its supply of skilled labour".⁷⁰ The Booth studies revealed the same point a few years later, in the 1890s. There was, in London, no "regular system of apprenticeship, or the training of boys in any form The London trade is fed from the provinces. Young men who have seen the general course of work in some provincial ... shop, where apprenticeship frequently obtains, find employment as improvers". The 1891 census revealed that only 44% of London coachmakers and wheelwrights who were heads of families, had been born inside London. This, however, was not exceptional, as the equivalent figure for carpenters and joiners was 41%, masons 46%, blacksmiths 47%, engineering workers 49%, and so on, though the bulk of occupations were in the 50-70% category.⁷¹

This situation was also not new in coachbuilding. It is clear from table 2:3 overleaf that London had for decades had a much smaller proportion of apprentices than the rest of England and Wales. What was significant about coachbuilding in London was the preponderance of the piecemaster system. The result was that the large numbers of time-served apprentices who went to London as improvers would have found their opportunity to "improve" severely limited by their employment situation. As the Booth survey noted, "Most ... find a place in establishments that 'work for the trade'."⁷² The combination of a small number of unsatisfactory apprenticeships and large number of unsatisfactory improverships meant there was a comparative scarcity of the "highest grade of skilled workmen" in London.⁷³ The aggregate of the above

factors substantially accounts for the low quality of much of the training, and allows a more accurate assessment of general skill levels.

Table 2:3 Approximate Journeymen/Apprentice Ratios for coachmaking in London and the Rest of England and Wales, mid-nineteenth century.

	<u>Males</u> <u>Over 20</u>	<u>Males</u> <u>Under 20</u>	<u>Ratio</u>
<u>London:</u>			
1841	3,821	372	10.3:1
1851	4,512	436	10.3:1
1861	4,855	598	8.1:1
1871	5,187	480	10.8:1
<u>Rest of England and Wales:</u>			
1841	6,210	1,247	5.0:1
1851	8,488	1,844	4.6:1
1861	11,054	2,920	3.8:1
1871	13,825	3,214	4.3:1

(b) Drawing Skills

The ability to make and read detailed drawings was an important part of the all-round craftsman's skill, particularly the bodymaker's. The practice in the larger establishments was that before a coach was built, a drawing would be made and agreed with the customer. The elaborateness of this depended on the size of the establishment. One account from the 1840's suggests that the employer would produce a rough drawing of any alterations or improvements from their standard design of that type of coach. A draughtsman, known as a "coach-pattern-drawer" then produced a

scale drawing of various views of the coach. This was then shown to the prospective customer and any further alterations then made until a final design was agreed, before a full-scale drawing of the several parts was made.⁷⁴

A contemporaneous account from practice at a London factory intimated that the customer only saw a full-scale drawing made in chalk on a large black board, and this also appeared the practice at Holmes of Derby in 1850, where blackboards twelve foot high by nine foot wide were used, this large factory employing specialist designers and draughtsmen.⁷⁵ In all three examples, patterns of thin wood were then made to guide the saw and plane of the workman.

Drawings were only usually made in "the larger manufactories". But even here, while full-scale drawings allowed "a great sub-division of labour, for there may be seen in the workshop where this system is used, one man making corner pillars, another hinge pillars, another doors, another cant rails, and so on", the drawback was that "it can only be carried out successfully, or rather profitably, in those shops that work for the trade, so that a dozen or more bodies can be made from the same drawing, as it would not pay to make an elaborate full-sized geometrical working drawing for every single carriage made".⁷⁶

In smaller establishments, much was left to the discretion of individual workmen.⁷⁷ The traditional alternative to the full-scale drawing was the "cant-board", which was "a plan ... not a plan taken in any one place, but the body is shown at the cant rail, elbow and bottom,

and anywhere that an important joint is located. Here we find all these lines plotted together, as it were, on one plane surface".⁷⁸ While drawing could only be properly taught through technical instruction, knowledge of the cant-board could be acquired during a traditional apprenticeship. But there were a number of reasons why even the latter did not happen. "Every craft has its mystery; and unfortunately for a learner, the mystery is maintained with needless selfishness by many workmen, partly from the fear that they would be training a younger man to supplant them, and partly from incapacity to elucidate to a learner the reasons for certain results. The mystery in coachmaking is the 'cant-board'".⁷⁹

Some employers attempted to partially remedy this situation. Holmes of Derby from about 1860 trained "at his own expense" apprentices in mechanics applied to coachbuilding. By 1890, several of these were foremen and managers of leading London factories. Philipson of Newcastle also started classes at the same time under his management.⁸⁰ Carriage building was one of the five trades initially covered when the Society of Arts established technical examinations in 1873, accounting for over half the total candidates over the first five annual examinations. These were taken over in 1879 by the City and Guilds of London Institute, established by the City Livery Companies.⁸¹ The syllabus for carriage building included "Freehand and Model Drawing, Practical, Plane and Solid Geometry, Mathematics, Theoretical and Applied Mechanics, Carriage Building".⁸² In 1880, City and Guilds classes were also established at the Manchester Mechanics Institution. The local master carriage builders "from the firm conviction that the great want of their young workmen was

a knowledge of scientific principles as applied to their particular trade" formed a committee, and paid and engaged teachers to conduct classes in the Institution.²³

Hooper, as owner of one of the premier coachbuilding houses in London, had at one stage found the difficulties of dealing with indentured apprentices so great, that he refused to take any more, and employed only "finished workmen". However, with the establishment of technical classes, his firm insisted on all their lads attending, and paid their fees. A register was kept of their attendances, and each year Hooper examined their work, awarding prizes to the most diligent and attentive. "The result had been most satisfactory, and he [Hooper] found the lads behaved better and took more interest in their work".²⁴ But the various efforts by some employers towards the end of the nineteenth century made little impact on the overall quality of coachbuilding skill.

C. THE PAINTERS

Introduction - The painting process

While bodymaking was the only one of the "private" coachmaking wood and iron trades that was generally performed by coachmakers in railway (and, later on, electric tramcar) shops, it did not require the same level of skill, reflecting the relatively simpler shapes encountered in these larger vehicles. The basic processes of coach painting, however, remained the same, irrespective of the type of vehicle. They are outlined here as a prelude to a discussion of the changing division of labour in the nineteenth century trade, and also as background to the revolution that occurred in motor car painting in the 1920s, which is the subject of the first part of chapter 6.

Very briefly, coach painting consisted of priming the woodwork, adding coats of "filling", which were then rubbed down, and followed by the colour coats, and finally by several coats of varnish.^{es}

Looked at in more detail, nineteenth century coach body painting practice was as follows. The woodwork was primed using 2-3 coats of lead-based paint, with 8-10 hours drying needed between coats. Each coat was sand-papered when dry, and could not be "wet" rubbed down, as this would have raised the grain of the wood. Some 5-6 coats of "filling", containing white lead, were then applied to all visible woodwork, to fill the grain of the wood. Each coat of filling had to be hard and dry before the next coat

could be applied. No rubbing down was done between these coats. "Hard stopping" (white lead thinned sufficiently to make a paste) was then applied by putty knife on nail and screw holes.

This was followed by a coat of "staining", and the woodwork then rubbed down or "stoned" with pumice stone and water until all or very nearly all of the staining was removed. About one third of the filling needed to be removed before a level surface, as smooth as "polished marble", was obtained. This rubbing down required changing the bucket of water every ten minutes. A number of coats of the requisite colour would be added, sometimes with sand-papering or rubbing down between them, though the colour painting was generally a much cleaner phase. Finally about 5 coats of varnish would be added. In between each varnish coat, the body was "flatted" down with fine pumice dust, flannel and water, to take the gloss off. A piece of cloth made up into a roll as hard as possible, perhaps two inches wide, being dipped into pumice dust, and used with water applied with a sponge. Not only did the water have to be clean, but the bucket also. "A paint shop should be as clean as a dairy". Any "lining" or heraldry work would usually be done after the first varnish coat, while the final varnish coat would be followed by polishing.

(1) Division of labour

The potential for division of labour in the painting process depended very much on the scale and type of output from each coachmaker's shop. The key factor was the necessity for long drying periods between the various coats, which would free the workman to do other work. Very low output might

provide work for only, say, one man and perhaps an apprentice or boy. Here the painter would follow the work through from beginning to end, while higher outputs might lead to some sub-division of tasks. Railway carriages, because of their size, required more labour and hence increased the opportunities for sub-division.

The first identifiable specialisation of labour was in herald painting, where a separate class of workmen is noted from at least the mid-eighteenth century.⁸⁶ While at the end of that century there were alleged first-class all-round workmen who could start at the first coat and finish with heraldic work on panels, in general by the middle of the nineteenth century heraldic artists were invariably specialists.⁸⁷ Where a firm was of sufficient size, as Holmes of Derby employing some 150 in 1850, they would employ their own heraldry and ornamental painters. Otherwise, firms would have to call on the services of these men as and when necessary.⁸⁸

Heraldry itself underwent substantial changes. The large coats of arms that took up half the surface of a carriage door on early carriages of state gave way on Victorian private carriages to a miniature crest or intertwined monogram often no larger than the size of a florin. Coats of arms were emblazoned in paint on the panels of early railway coaches, though by later in the century, heraldry and monograms were usually "transferred" and not painted on railway coaches.⁸⁹ A company like the Bristol Wagon and Carriage Company could at the end of the nineteenth century still have panels painted by an outside heraldic painter when only a few such designs were needed, but used paper transfers for large orders.⁹⁰ By the early twentieth century in London, for example, heraldic

work was confined to a few men, always employed on piece-rate. The work was increasingly scarce, as monograms and crests were not usually painted on motor cars, and even transfers were sometimes used on private carriages.⁹¹

After the separation of most heraldry work from ordinary coach painting, the next major division had probably occurred by the early nineteenth century. Body painters were distinguished from ordinary coach painters or carriage painters, and paid the wages of first-class painters, with carriage painters paid those of second-class.⁹² Carriage and wheel painting required significantly fewer coats of paint and varnish than did bodies, and the surface did not have to be so smooth.⁹³ Once again, any division of work into these two categories depended on the scale of production.

One important feature of nineteenth century carriages was the "lining" whereby colours were "edged" or "picked-out" in a different colour. It was reputedly unknown at the end of the eighteenth century when it was the fashion simply to fill in the beadings with a colour in relief to the colour of the body.⁹⁴ But by the 1830s, when a very dark colour was used for the "ground colour", it was the practice to run a very fine line of a lighter shade "in order to definitely mark the inner edges of the framework". When lining developed, it occurred not just on the body but also on the under-carriage and wheels. "Were the perch, beds, and wheels painted of one colour, they would look exceedingly heavy and clumsy; but the skilful management of the fine lines produces a pleasing optical illusion".⁹⁵ One estimate was that a first-class private carriage could have more than a mile's length of lines painted on it.⁹⁶

After herald painting, lining was thought to require the greatest skill; everything depended upon the steadfastness of the hand in drawing clean and well-defined lines. The fine-liner was described as "the head workman, par excellence, if not in responsibility, in a paint loft". In large factories, lining came to be done by a special workman, while in smaller shops the fine-liner was a varnisher also.⁹⁷ Varnishing was also a very skilled job, an English commentator in 1871 suggesting that "to lay on varnish perfectly is the most difficult part in the whole art of coach painting I may safely say there are hardly a dozen really first-class varnishers in the trade". An American contemporary similarly complained of the "comparatively few, even of good workmen, who can varnish a car properly".⁹⁸

The laying on of the colour coats, lining, and varnishing, were the top end of the trade, but they required good surfaces. The work involved in this was far from pleasant, and where the scale of output could sustain it, there grew up a distinct category of workmen performing these tasks at a lower rate. Thus we find reference to "painters' labourers" in the latter half of the nineteenth century.⁹⁹ In the USA in 1860, a factory making rail cars and omnibuses had the painters divided into classes as "primers, rubbers, colorers, flatters, letterers, landscape painters, scrollers, varnish finishers".¹⁰⁰ In Britain such a division of labour probably only approached this in railway carriage shops. It is difficult, however, to find direct evidence because of the catch-all term "painters' labourers" which would have included primers and rubbers at least.¹⁰¹

In Britain, the term "brush hand" came eventually to signify most workers in paint shops who were not fully qualified painters. It is not

clear when the term came into general use; certainly the secretary of the London-based Sovereign Friendly Society of Coach Painters did not use it in 1893, dividing the trade into three groups - labourers, carriage painters, and body painters and fine liners.¹⁰² A Liverpool brush hand described in 1911 how his work was much dirtier than the painter's. While labourers did the priming coats, the brush hand did the filling coats. "The brush hand has to splash the paint about. It does not matter how it flows, because it will all be levelled with the stone." He used heavy brushes called "pound brushes", and when doing overhead work, the paint ran down his hands. By contrast, the painter put on spirit colours with fine soft brushes. The brush hand had to make up his own filling, while the painter often, by the end of the nineteenth century, received his colours already ground with turps at the paint mills, and mixed up with gold size or varnish.¹⁰³

Compared to the pound brush, a "varnish brush is treasured almost like an heir-loom. Certainly, some of them used for finishing coats only, last for 15 or 20 years, and are very carefully preserved in keepers or pots made expressly, and not allowed to become dry. They are when raised to the dignity of varnish-brushes only good ordinary ground brushes that have been used in colour for some time, or for first coats, so that the loose hairs may come away, and after a while each single bristle splits up, and the brush becomes softer and more even."¹⁰⁴

Given the vast difference in working conditions between brush hands and painters it is important to understand how the two groups separated. A 1920s official publication suggested that coach painting apprentices first learned to apply the lead paint foundation, then became, in succession,

rubbers, flatters, and brush hands. The better apprentices would then receive further training as liners and finishers.¹⁰⁵ In fact, there was a big difference between London practice and elsewhere. Outside of London, painters who had served their time but were not very successful at lining as a "pencil hand" would become a brush hand. They were known in the trade as "broken painters", and how far they went in the painting process would depend on local custom.¹⁰⁶ One Newton Heath member claimed that in nearly all railway and tram centres, brush hands painted not only all the inside of coaches, but frequently did the filling up, the colour painting and the varnishing on the outside as well. He also believed that this practice prevailed in most private shops.¹⁰⁷ Only the ability to do lining separated them from coach painters.

However, "In London", according to UKSC General Secretary Charles Kinggate, "painters are made from brush hands". The practice was for brush hands to go as far as putting on the colour coats up to the varnish coats. To get employment as painters, brush hands would have to show competence as liners and finishers (ie varnishers).¹⁰⁸ A handbook on London trades at the beginning of the century recommended boys going into coach painting to practice at home the mixing and matching of paints, varnishing, and especially lining; and further suggested they should also attend technical classes.¹⁰⁹ At the LCC Trams, where a few years before there were complaints that brush hands were out of all proportion, the manager eventually agreed in the 1900s with Kinggate on the necessity of raising competent men only, and putting them on one month's probation.¹¹⁰ In this situation, therefore, the only mechanism for improvement for the brush hand was by their own efforts. But as the London coachmaking trade was dominated

by piecemasters (see section D below), there were vested interests restricting the number of painting vacancies, as piecemaster painters would employ brush hands where possible as they commanded a lower rate of wages.

The Newton Heath member, cited above, argued that the UKSC had been too conservative in its methods of organisation. Some brush hands were employed solely on finishing bodies, and earned a high rate, but because they could not "line", they were barred from joining the UKSC. This was an anachronism, as the society admitted vicemen, or fitters, many of whom earned a lower rate than brush hands. In London the huge division between coach painters and brush hands, exploited by piecemasters, accounted for there being only 400 painters there in the UKSC. "We do not arrest this evil by keeping these men out of our Society".¹¹¹ His plea was to eventually touch a nerve.

(ii) The physical side of painting

Painting required its share of hard manual labour. While the Holmes factory in Derby already had two steam-driven grinding mills by 1850,¹¹² they were not common until much later in the century, by which time paints could be bought from suppliers ready mixed. "To grind enough occupied days with muller and slab", recalled one former coachpainter. He thought the hardest colour was patent yellow - "For one of those apprentices to grind half a pound of this patent yellow in one day, would prove to be the hardest day's work ever they had attempted since going to the business". He himself remembered spending "many a day grinding lake to be

ready for the coach painter, and a long and tedious job it was".¹¹³ George Sturt, the wheelwright, similarly recalled "I hadn't enough strength in my arm to grind up Prussian-blue for finishing a waggon body".¹¹⁴

When carriages were brought in for repainting at the beginning of the nineteenth century, it would take 8-10 days of rubbing down, just to get out the cracks. No preparation of any kind was used to take off the varnish. "It was then quite a customary thing to see the coach painter's fingers all tied up at the ends, being quite worn through with having so much hard rubbing to do". Only from about 1830 did the coach painter use anything in the shape of a pickle to soften and take off the varnish before rubbing. "This pickle was of a very disagreeable nature, and was boiled by the apprentices, and used hot, viz: - boiled urine". The polishing of the finished carriage also involved "an enormous amount of work". A receipt for polishing a carriage in 1770, using an old silk handkerchief and flour, showed the man receiving 50 shillings on piecework. This was at a time when a first class painter commanded weekly wages of about 18 shillings.¹¹⁵

As well as the physical side of some aspects of the painting process, the work was generally reckoned to be unhealthy, in particular because of the preponderance of lead paints. Adams in 1837 referred to the "unhealthy nature" of coach painters' employment "in heated apartments impregnated with mineral and other odours". But he believed painters were becoming healthier, and attributed this to greater personal cleanliness.¹¹⁶ How true this was is debatable. Fourteen year old Alexander Robertson, apprenticed at Atkinsons of Newcastle, told the 1843 Royal Commission on Children's Employment that anyone caught washing their hands in the paint shop would

be fined two shillings. There was no place to wash them and boys fetching their teas had to take them as they were. He had had very bad headaches, dizziness, and sickness his first week there. Another apprentice, 16 year old Anthony Hetherington, often felt dizzy as well. The paint shop was very hot, being situated above the smiths' shop, which was compounded by the need to keep the windows closed when varnishing took place. The working hours in the paint shop were very much longer in the summer, sometimes whole weeks from 4am to 8pm, compared to the normal 6am to 6pm, leaving no time for any outside pursuits. Hetherington found that grinding the lead-based colours also caused him to spit a lot, because of the nasty smell.¹¹⁷

Thackrah found that coach painters suffered in lesser degree from the disorders affecting house painters. Bilious and gastric problems were frequent, but the most serious illnesses were colic and palsy. Often there was a local affliction - one arm, or even one finger losing its power of motion, generally the one that had held the brush. His researches also suggested that house painters in London were greater affected because they worked longer hours than in the provinces "so that the men had not leisure enough to make it worth their while to clean themselves properly in the intervals".¹¹⁸ These observations would certainly apply to London coachpainters, who also had a longer working week than in the provinces; while the coach trade, like the building industry, was seasonal, though for different reasons, and this would generally exacerbate the problem of cleanliness in the summer months.¹¹⁹

Thus, one account in the early 1870s refers to coach painters, whose "working clothes would almost stand upright with the successive coatings of

paint that are upon them and who unmistakeably carry about with them the nature of their calling in the smell of their clothes".¹²⁰ While the materials remained the same, little changed in the paint shops. In 1893 the secretary of the Sovereign Friendly Society of Coach Painters complained of the "bad atmosphere caused through using so much white lead and varnishes and bad ventilation (a great deal of it because we are obliged to be shut in because of the dust spoiling our varnishing)".¹²¹ And a few years later a visitor to the North British Railway workshops at Cowlairst remarked of the paint shop "its odorous atmosphere would indicate to a blind man the industry being carried on".¹²²

Despite comments in trade journals, such as "most painters know how prejudicial white lead is to the health of those who have to use it",¹²³ washing facilities continued to be inadequate or non-existent. In 1910, factory inspectors in the south east of England reported that "considerable pressure has had to be exerted to obtain proper conveniences" in wheelwright and coachbuilding works. In the same year, a Birmingham factory inspector investigating a case of lead poisoning in a carriage building shop found "the usual lavatory accommodation was not provided".¹²⁴ Of course, a major factor in prolonging this state of affairs was the weakness of the union. One example of the members organising to change this was at the LCC tram works at Leytonstone where in the few years prior to its closure in 1911, a trade union committee was set up. This committee established the right for men to use the lavatory during working hours (as well as stopping the manager watching the men through a little window when they were in the lavatory); it also won the right for them to wash their hands after they had been using white lead, and for water, basins, and soap

to be provided for this purpose. In this instance, the management had the last laugh when, with the transfer of the work from Leytonstone, the eight coachmakers who were discharged and not transferred had all been on the committee - 4 UKSC and 4 Wheelwrights' Operatives members.¹²⁵

There was, however, an awareness by some employers of the problems associated with lead. In the mid-nineteenth century, the London employer Hooper had tried replacing white lead paint, because it was "pernicious to health", with white zinc paint, but found the latter had trouble drying and did not retain its white colour as well as lead paint.¹²⁶ Consequently lead paint continued to be used on all vehicles into the twentieth century, and with it came fatalities. It was estimated that some 75 pounds of lead were used to cover the top of each tramcar in Sheffield, being poured on the roof canvas to keep water out.¹²⁷ A review by the factory inspectorate of lead poisoning in coachmaking early in the twentieth century concluded that: "Poisoning is largely due to dust arising in sand-papering the coats of paint, or the stopping used to fill up cracks or irregularities of surface".¹²⁸ The main problem was dry sandpapering, with exposure to the dust dependent on the time spent on dry rubbing. Table 2:4 below shows an estimate of the direct exposure to lead dust, from sandpapering, of different grades of paint shop labour in a motor car works in 1911.¹²⁹

Table 2:4 Hours sandpapering per day by grade of paint shop labour, 1911.

Painters	1-2 hours
Brush hands	2-3½ hours
Painters' labourers	4-5 hours

However, a Birmingham inspector claimed that lead paints were seldom rubbed down dry, except around beadings and door joints where the pumice stone would have had to be shaped to the curve. One Wolverhampton motor car works decided that in future any dry rubbing down would be done under exhaust-draught, while after any wet rubbing the floor would be cleaned to avoid the rubbings drying out and forming dust. A year later, inspectors claimed progress in motor car works in Coventry and elsewhere in locally applied exhaust ventilation for dry rubbing down of paint on wheels, and the substitution of wet for dry rubbing down of bodies.¹³⁰ There were some moves away from lead-based paints before the first world war. Thus a Birmingham factory inspector reported in 1911 that a large motor car factory had discontinued it after several cases of lead poisoning had occurred. In the south-east, a number of firms adopted leadless paints, and at one large van works in north London, the manager found that zinc white was cheaper and had better covering power than white lead.¹³¹ A large motor firm in Coventry also changed over to practically leadless paint once the factory inspector proved they had more cases of lead poisoning than the rest of the Coventry motor industry.

But a number of Coventry side-car body manufacturers were reluctant to change over because of their familiarity with lead paint. Similarly, while the Leicester factory inspector urged leadless paint on a tramcar works, the management countered by explaining they had to work according to contract specifications.¹³² The railway carriage works experienced the worst problems. From 1900 to 1909, inclusive, at least 342 of the 697 lead poisoning cases in coachbuilding were found in railway carriage works, with a further 185 of the 386 cases from 1910 to 1914, inclusive.¹³³

Coach painting, therefore, remained distinctly unhealthy before the first world war, as figures in table 2:5 at the end of this section demonstrate. Of the six officially recorded fatalities of coach painters from lead poisoning in 1909, all were fairly young - viz., 29, 32, 34, 36, 38, and 40 years old.¹³⁴ As noted above, the skilled painters usually had less exposure to lead than other paint shop workers. At the Midland Railway's works at Derby, 13 of 18 cases of lead poisoning in the years 1900-1905 were of "inside painters". These men were a "quite different" class to the skilled coach painter, got "dirtier", and were "more careless". The chief foreman painter there speculated that many of them slept in the shirt that they wore during the day at work; and this was corroborated by the Wolverton works manager.¹³⁵

Exposure to lead came from a variety of sources, of which painting and sandpapering have been mentioned. Another was the preparation of the paints, where practice varied considerably between different workplaces, and was not just based on their size. Thus, Bernard Daly, a Liverpool brush hand, said that stopping was mixed "usually by the painter or the brush hand who is using it. Sometimes an apprentice is told off to make sufficient for half a dozen men". At Maythorns, in Biggleswade, employing about 150 in total, the men mixed the stopping themselves; while at a Redhill carriage manufacturer, with some 55 employees, the head painter usually mixed the stopping for his men. At the LCC Tramways Charlton repair depot, a "colourman" mixed all the stopping, as well as the colours.¹³⁶

The number of workers potentially involved with lead in coachbuilding was very large. It was estimated in 1913 that some 29,308 persons (all but

one being male) had contact with lead in the manufacture of locomotives, coaches, carriages, and other vehicles. Of these, 3,971 were involved in mixing and preparing paint; 14,895 in rubbing down and painting; and a surprising further 10,442 on work other than painting, such as bedding and jointing (ie bodymaking work). Factory inspectors pointed out that lead poisoning in coachbuilding was proportionately much less frequent than in trades such as file cutting or printing.¹³⁷ However, the lead-related illnesses still constituted a major health hazard in the coachbuilding industry, and even the highest skilled craftsmen were not immune to it.

Figures compiled by the UKSC for the period November 1892 to 1910 show that their painter membership on average died younger than any other branch of the trade (being followed by bodymakers, the other group exposed to lead). These returns in table 2:6 overleaf include men who left the trade before they retired but remained members to gain the friendly benefits. The compiler of the table commented "this tends to raise the average age at death very materially, especially in the case of painters who are frequently advised to seek other employment on health grounds".¹³⁸

In conclusion, as well as being significantly more unhealthy than other coachmaking trades, coach painting was generally, even in the nineteenth century, a branch of the trade already based on an extensive division of labour. Painting consisted of a rigid sequence of tasks. It often suited the painters, as well as the employers, that the former should concentrate on the top (and cleaner) end of this process, where possible; and that those workers exclusively performing the earlier stages should not be considered skilled nor paid skilled wages. The coach painters, therefore,

entered the twentieth century in a very different situation to the bodymakers and trimmers, where no such sub-division had occurred.

Table 2:5 Lead poisoning in coachbuilding, 1899-1914.¹³⁹

<u>Year</u>	<u>Cases</u>	<u>Deaths</u>
1899	65	1
1900	70	5
1901	65	4
1902	63	1
1903	74	5
1904	49	4
1905	56	3
1906	85	7
1907	70	3
1908	70	3
1909	95	6
1910	70	6
1911	104	5
1912	85	7
1913	71	2
1914	57	4

Table 2:6 Average age at death in different UKSC trades, 1892-1910.

<u>Branch of trade</u>	<u>Average age at death</u>
Painters	53.1
Bodymakers	54.7
Smiths	57.5
Coach fitters	57.7
Wheelers	58.0
Trimmers	60.0
Carriagemakers	61.7

D. PIECEMASTERS

The piecemaster system has already been encountered earlier in this chapter. Where it existed, its beneficiaries, the piecemasters, were an "aristocracy" within what has often been considered an "aristocratic" trade. So far, its implications for levels of skill in the industry have been considered, but it also had profound implications for the ability of coachmaking trade unions to organise during the nineteenth century, especially in London, the centre of the trade. No account of the coachmaking industry and its unions would be complete without a description and analysis of the piecemaster system.

Due to problems of terminology, it is necessary to look briefly at definitions. According to Cole, piecework "in the widest sense of the term implies simply that the employer is paying not so much per hour to the workers employed on the job, but so much for the job itself". The employer would pay a price for the job, but it would be a matter of "comparative indifference" to the employer "to whom he pays it or how it is finally distributed". But, for the worker, it was fundamentally important. Cole argued that the term "piece-worker" used to be given to a sub-contractor who found the labour, received a lump sum payment from the employer, and made his own terms with the individual workers he had engaged. The Amalgamated Society of Carpenters & Joiners even used the terms "sub-contractor" and "piecemaker" synonymously in their rule book.¹⁴⁰

Schloss found it necessary to distinguish between the "contractor", the "piece-wage foreman" and the "sub-contractor". The contractor would take on a piece of work at a particular price; his subordinate workers would draw only their normal time-wages, and the contractor would be entitled to what was left over at the end. The piece-wage foreman would be remunerated for his supervision by a piece-wage or premium. Schloss enumerated three different arrangements for this, one of which was a contract work system, identical to that operated by the contractor. He designated the piece-wage foreman, irrespective of the method by which his own and his subordinates' wages were calculated, by the generic name applied to him by the working classes of the time - viz. "piecemaster".

Neither of these first two categories, the contractor nor the piece-wage foreman, was an employer, thus distinguishing them from the third, the sub-contractor, "a sub-employer working under a superior employer". However, according to Schloss, the distinction between the sub-contractor and the piecemaster or piece-wage foreman, was of little practical importance, as both were under a strong incentive to "sweat" their workers. The major difference was that while a sub-contractor could effectively set what rate of wages he liked for his subordinates; under a piece-wage foreman, the employer was ultimately responsible for deciding the level of time-wages paid to subordinate workers, even if he did often follow the foreman's advice. But having to accept a higher level of wages for their subordinates than they would have paid if they had been sub-contractors, did not only not stop piece-wage foremen from "sweating" their operatives by making them work far faster than their normal speed, it may even have encouraged it.¹⁴¹

In the sources on the coachmaking industry, the terms "pieceman", "piece-boss", and "piecemaster" regularly occur, meaning someone who takes a job piecework, with people under him.¹⁴² But it was not always clear whether the person taking piecework was a contractor, piece-wage foreman, or sub-contractor. The term "sub-contractor" did sometimes occur, however, and the evidence points to sub-contracting being the most common form of piecework in the industry, especially in London. Given the wide usage of the term "piecemaster" in coachmaking, confirmed by later collective agreements to abolish "the piecemaster system", I intend to use this term in the following pages to cover both contracting and sub-contracting, as well as Schloss's more limited use of it as piece-wage foremanship.

Early meaning of piecemaster in coachmaking

Adams wrote in 1837 of piecemasters as a class of small coachbuilding tradesmen. In some instances these men produced the complete product, and the ostensible coach builder was merely a retailer. In other cases, the piecemasters produced the body and carriage, while the painting and finishing were done by the coach builder.¹⁴³ This latter type were referred to by Holmes of Derby in 1850, when describing piecemasters as "small tradesmen who carry on one branch of the trade only".¹⁴⁴ Many of these early piecemasters apparently produced very good work. But because of their limited capital, they could not afford to keep a stock of dry material, and consequently "their work, even if good, will not stand". Often, though, piecemasters employed only apprentices and "inferior workmen".¹⁴⁵

In the 1870s, according to a later union account of the system, "it was no uncommon thing for bodies built in back alleys and mews to be hawked around to the Baker Street Bazaar or to one or other of the coachbuilding firms proper and sold to meet the current week's wages of the men working for the smaller semi-employers who were in existence in these rat-holes".¹⁴⁶ Even in the 1890s, while the highest class London firms built the complete product, other "less particular" firms made use of those small employers who worked "for the trade", especially in bodymaking. These latter produced more cheaply, by employing improvers from the country at low wages. The Booth survey quite clearly distinguished this practice from the piecemaster, understood as a sub-contractor of labour only.¹⁴⁷

While labour and materials sub-contracting may have historically preceded, and then survived alongside, labour-only sub-contracting, the latter was definitely entrenched in London by the middle of the nineteenth century. At Hoopers, it was reported in 1855 that each department had a foreman in charge. If employed on daywork, he kept a record of work done and time worked by the men; while on piecework he employed "men of his own choice" and made up his account weekly or monthly.¹⁴⁸ At about the same period it was also noted that "the great mass of coachbuilding in every branch is accomplished by the piece", and "the system of piecework in the coach trade opens unusual facilities for clever workmen, who, by industry and application are enabled to earn very high wages, and to make a comfortable provision for failing health and old age".¹⁴⁹

Coachmaking unions and piecework

The UKSC had a formal position against all piecework from an early date. The 1840-47 rules state "wherever piecework is found injurious to the trade it is to be discontinued". The 1848 rules attempted to go further - "this Society discountenance piecework altogether" - but with the saving rider "and call on the members to abolish it where it is practicable to do so". This position remained in the rule book until 1913.

There was a slight elaboration in 1876 which did not last long - "that any town may make bye-laws to regulate the system of piecework and abolish it where practicable". That, of course, was difficult. Thus, in 1875, the General Secretary wrote to the Hull branch, "where good piecework prices are offered it is sometimes difficult to resist the introduction of piecework". But it was not impossible. In Preston, the following year, according to an employer, a UKSC member went in for piecework, but "before the man had finished his first job the union called him before them and told him he must take no more work, as piecework was not recognised in Preston, and he left us".¹⁵⁰ The Webbs were therefore correct when they cited the UKSC as one of those unions which insisted on timework.¹⁵¹

In practice, however, piecework operated in a variety of forms in a number of parts of Britain, and the union was often powerless to stop it, especially in London. Writing as late as 1907, W. Awcock, the UKSC London branch president, admitted that piecework only existed in London was because the union was not strong enough to prevent it. Both daymen and piecemen agreed it was "a pernicious system", but the choice was often that

of "becoming a pieceman or working for one". If the union forbade members to take piecework, it could not prevent the non-unionist from doing so.¹⁵²

Under these circumstances, the union seems from an early date to have attempted to control the system where it could not eradicate or prevent it. The first manifestation of this in the rule book was when in 1866 a number of rules were introduced regarding the employment of non-UKSC members by UKSC piecemasters. This offence was punished by a series of fines, followed ultimately by expulsion, which was used. But in 1889, the fines were decreased, and expulsion dropped.

Secondly, there was the issue of the wage rate paid by the piecemaker to his daymen; and, thirdly, the issue of the share-out of the balance left at the end of the job. Rules on these were not brought in until 1895, which was in sharp contrast to the ASE. In 1861 that union had fixed penalties, fines, and eventually expulsion on any member working piecework who did not share equally any balance. Even more forceful was that these penalties also applied to any member working under a piecemaker, when, on not receiving an equal share of the surplus, the member refused to leave that employment. It was later claimed that "being a well-organised trade" enabled the engineers to render the use of the piecemaker system "unobjectionable".¹⁵³

By contrast, the UKSC took a very long time evolving a national policy. In 1874 there was a dispute at the two railway shops covered by the society's Openshaw branch, Ashbury's contract shop and the Gorton works of the M, S, & L Railway, over the sharing of the piecemen's balance. The UKSC was unable to solve the problem even though the piecemen and the bodymakers

concerned were in the society. Eventually the Gorton manager decided that the piecemen were to receive 2s per week more wages than the daymen they employed, and, on completion of the contract, 7½% of the balance; the remainder being divided amongst the pieceman and his daymen, according to each individual's wage rate and time worked on the contract. The UKSC Journal reported that the engineers already worked this system at Gorton and its neighbourhood, but it was "new to our trade".¹⁵⁴

Generally, issues concerning piecemasters were dealt with on a local basis as and when they arose. Events in Sheffield in 1892 finally prompted a centralisation of policy. At Craven's railway contract works UKSC members struck against their piecemasters keeping all the balance money. Most of the piecemasters were in the UKSC, but promptly advertised for blacklegs and worked with them, while the strikers had to seek other work. The local branch secretary told the Webbs that while the piecema^{ster} system was prevalent, elsewhere the surplus was generally divided up with the men. The situation at Cravens, however, did not improve, and in 1894 the piecemasters were still against sharing profits with the men.¹⁵⁵

Following this, the 1895 UKSC rule changes spelt out that piecemasters should pay the standard wages of the shop; produce their book for checking, when requested by the town committee; and that any piecema^{ster} not sharing his balance should be expelled - though this required the sanction of the EC and the General Council. It was never the aim of the society to drive piecemasters out. Numbers of UKSC members who became piecemasters kept up their contributions in order to gain the friendly benefits the society offered, especially superannuation.¹⁵⁶

Unionist piecemasters could behave very differently from non-unionist ones. In the 1859-60 hours agitation in London coachmaking, no less than 7 of the provisional committee were piecemasters. One explained why he supported a memorial to the employers - "If he were a dayman, he should go into it with all his heart and soul; therefore he would advocate it now, because he did not know that but next week he might be a dayman himself".¹⁵⁷ Charles Kinggate, a future UKSC General Secretary, was in the 1890s the only pieceman carriage maker in the London branch. Not only was he branch president, he was also instrumental in setting up the Federal Union in 1894. Further, he was president of the "Auxiliary Stationary Benefit Society", with some 125 members in the mid-1890s, set up to counter the LCTU's payment of high unemployment benefit for long periods. Various efforts were made to blacken his name by some members in London, which were readily seized upon by the Liverpool-based executive.¹⁵⁸ This resulted in a new rule in 1895 barring piecemasters from holding society office.

By contrast, the smaller London union, the LCTU, was actually built around the piecemaker system. One account early in the twentieth century suggested that it was "at one time almost exclusively composed of piecemasters".¹⁵⁹ In 1894, a "London Bodymaker" wrote to Reynolds News complaining that if a man spoke against the piecemaker system at a union meeting, he would become a marked man, be boycotted and not get work. In the same year the LCTU's secretary, assistant secretary, and president, were all piecemasters;¹⁶⁰ while even in 1907, when change was beginning to occur, its secretary, J.R. Annison, had been a piecemaker at Corbens for "very many years" before he retired from work, and half its committee were still piecemasters.¹⁶¹

LCTU rules stipulated that piecemen members had to employ union men where possible. If they took one off the union's unemployment book they even received a payment of 2s6d. If no union men were available, then an applicant for the work had to join the union if he were a good enough workman. If non-members were employed, this had to be entered in the job-book under pain of a 10s fine.¹⁶²

The theory was that "One man takes the piece of work, then employs a mate, sometimes more". But in practice, the available work could be monopolised - "in some shops one man has all the work much to the loss of the other men employed".¹⁶³ A UKSC critic of the system wrote that "To be a shop boss is an irresistible claim to high honour", and claimed that when an LCTU man got the shop boss job, the UKSC daymen had to join his union or get out. In one establishment where both unions had daymen and piecemen members working, an attempt to reduce piece prices by the employer had been resisted by both unions, but one LCTU piecemaster stayed on under the reduced rates, and had 20 mates working for him instead of 3 before, yet he was only subject to a "paltry" fine. It was also claimed that while the LCTU allowed young men to join if they were "capable" of earning a certain rate, it did not follow they would get it if working under a piecemaster.¹⁶⁴ The union's rules were also framed to keep piecemasters in the workshop in the event of disputes.

Infighting among the various small unions in London led to accusations of the UKSC's London branches being run by piecemasters. In fact, in 1907, only one piecemaster held any office in the four largest branches of London, London West, London South, and Stratford. There were, however, six

piecemaster branch officers in the two new branches of Kilburn and London North, these having been opened through the piecemasters' "zeal and energy".¹⁶⁵ The 1907 UKSC rule book did reiterate the position that "Any member being a piecemaster or charge hand in a shop, having power to put on or discharge men, shall not be allowed to hold any office". But this was softened in 1913 by the rider that they could not hold office only "when any other qualified member is nominated".

Taking a leaf out of the LCTU's book, the UKSC in 1907 changed the rule on fines for piecemasters employing non-society men to one where it should be a condition of employment that the man join the society. If he did not, the piecemaster could suffer a small weekly fine subject to the discretion of the branch committee. At the same time the recently introduced penalty for not sharing balance money had been reduced from possible expulsion to fines, again at the branch committee's discretion. The UKSC was reacting to a situation where, in London, it had to use the piecemaster system, being too weak to outlaw it. In the early years of the twentieth century, the piecemaster system existed in the London wheelwright trade "to as great, if not greater, extent than the coach trade" and the secretary of the London-based Wheelwright Operatives' Union was a piecemaster at Liversedge's.¹⁶⁶

Extent of the system

The main benefit of piecework for the employer was the cost. UKSC General Secretary Waldron guessed in 1892 that men were worse paid under piecework than they had been twenty years earlier.¹⁶⁷ In line with this, an employer, W.H.Hamshaw, estimated in 1902 that piecework prices were about

the same as forty years previously, and had actually fallen over the last twenty to thirty years. This compared to about a 15% rise in the day wages of skilled men, and nearly 40% for labourers, along with a 7½-10% reduction in the working week over that 40 year period.

For Hamshaw, the "obvious remedy" to rising day wages was piecework. He alleged that men were more willing to work piecework than daywork, but that many factories had stayed on daywork through the difficulties of getting reliable men. There were two methods of piecework open to the employer. He could pay daywork wages and pay the balance when the work was completed, or "the same plan holds good if a piecemaster has the loft and employs his own labour".¹⁶⁹ Both systems had their problems for the ordinary craftsmen. According to Waldron, while there were some good piecemasters, "human-nature-like" the piecemaster got men to work "as cheaply as he can".¹⁶⁹ One worker alleged that the whole piecemaster system encouraged "sweating" because if the piecemaster earned too much, the employer would reduce the price, thus leading the piecemaster to further pressure the men under him.¹⁷⁰ But it was also acknowledged that "many piecemen pay better wages than the master coachmaker".¹⁷¹

A Bristol employer believed that piecemasters would probably employ lower class men in order to pay lower rates, to increase their own profit; and this would lead to bad workmanship.¹⁷² But the LCTU, with its vested interest, complained that the system whereby the employer, rather than the piecemaster, gave out piecework, led to "the gradual introduction of young unskilled men at low wages, so ousting the higher paid men".¹⁷³

The UKSC experienced a particular problem in the painting branch of the trade. A Newton Heath member claimed in 1905 that some UKSC piecemasters in London employed an "outrageous" number of brush hands; while the average was three brush hands to one painter, there were some instances of 20 brush hands to two painters.¹⁷⁴ General Secretary Kinggate wrote to the London District Committee in 1912 urging it to concern itself with flagrant cases of UKSC members "employing the cheapest labour" to do painters' work. He also complained to the London West branch secretary that a piece-boss, whom he thought to be in the UKSC, had 6 brush hands to one painter. "There would be more work for painters if you compelled these kind of men to employ painters. No, they employ them because they are cheap."¹⁷⁵

The Booth survey called the system "the great evil" in the coach building business. The employer "has no direct relation with the men employed by the piecemaster, has generally no knowledge of what they are paid, and sometimes keeps no record of their numbers". The system also intensified "the evils of irregularity of employment, as the piecemaster has no inducement, nor indeed any power, to find work for his men in seasons of slackness. Under a piecemaster the tenure by which men hold their work is practically limited to the job in hand, and an evident result of this insecurity of tenure is found in the extent to which men shift from shop to shop".¹⁷⁶

Firms using piecemasters often also directly employed part of their workforce on day work. Alford and Alder, for example, in 1892, had only about half their work done by piecework "under piecemasters or sub-contractors, who are selected for their good qualities, and who engage the

men who work under them; they also are responsible for the excellence of the work, and pay the men they engage".¹⁷⁷ Another firm with about half its workforce on day work was Thorn of Great Portland Street. Table 2:7 shows the small scale of most of its piecemasters in 1893:

Table 2:7 Piecemasters and their mates in a London firm, 1893.¹⁷⁸

Carriage maker	+ 3 mates;
Bodymaker	+ 1 mate;
Bodymaker	+ 1 mate;
Bodymaker	+ young mate + youth;
Trimmer	+ 1 mate;
Trimmer	+ 3 mates;
Viceman	+ 3 mates;
Smith	+ 3 smiths + 4 hammermen + 1 lad.

Holmes & Company, with a major works in Derby and branch shops in Lichfield, Sheffield, Burton, and London, believed piecework to be the best system but only had one man working it out of 119 employed at Derby. However they considered "payment through sub-contractor a bad plan, but we use it in the London paint shops, not having been able to alter it yet", with some 5 of the 7 employed there on it.¹⁷⁹

Evidence of a number of UKSC branches to the 1886 Royal Commission on the "Depression of Trade and Industry", and some employers to the 1892 Royal Commission on Labour, enables a picture to be drawn of the extent of piecemasters in private coachmaking outside of London (except for railway shops, which will be considered below). In Scotland, union branches in Kelso, Perth and Dundee, and employers in Dundee and Stirling reported no

piecework. Similarly, in Yorkshire, branches in Wakefield, Halifax, and Leeds reported none. In the north, Carlisle branch had none, while Newcastle said only a few were on it, with the large Newcastle employer, Angus, claiming they used it to some extent. Lancashire had some, with Blackburn branch reporting both daywork and piecework, as did the Preston employer James Walmsley, who had overcome union opposition to piecework in 1886 (see chapter 1). In Ireland, Downpatrick branch had none, while Dublin had some, it operating at Huttons for one. The south west had none in Devises, Bridgwater, or Taunton, nor at an Exter employer of 46 men, though it did operate in Bristol, with Perry & Co using sub-contractors.¹⁰⁰ Outside of London, therefore, there were a number of pockets of piecemasters, but most areas appeared free.

It is interesting to compare these findings with an ASE survey of 1861. The latter found that out of 173 districts, only 22 had piecemasters; and of the 533 piecemasters identified, nearly 75% were in Lancashire. The system was confined to the machine and stationary steam-engine making districts of northern England, plus a few locomotive centres. Unlike the ASE, which was little troubled by it after 1890,¹⁰¹ the UKSC was up against the piecemaster system until the first world war. Its survival in the early motor body building industry will be examined in chapter 4.

Piecemasters and railway shops

The piecemaster system also operated in a number of different variants at most, if not all, railway carriage shops. The ASE survey of 1861 specifically identified them in the locomotive centres of Swindon, Derby

and Wolverton (being called "leading hands" at Derby).¹⁰² Their presence probably related to the railway companies' initial need to sub-contract the management of the maintenance of their rapidly increasing numbers of locomotives and rolling stock. The evolution of the system at Swindon illustrates this.

When the GWR locomotive workshops were established at Swindon in the 1840s, nearly all of the work was carried out on a contract system. The contractors each specialised in a particular branch of the work, for example, steam hammer work, foundry work, wheel and tyre repairs. The theory was that the contractor would supervise the work and share any profit with his men, who received a low base rate. While some contractors made little profit, others left considerable fortunes. This system did not last very long, being followed by a piecework system where the gross balance payable to a gang was handed to the "chargeman", who would work out the amount to be given to each man.¹⁰³ Under this procedure, the chargeman "could and did pay the gang what amount he pleased, and kept several pounds a week extra for himself". Quite likely this system was in operation when the carriage works were built at Swindon in the late 1860s and early 1870s. At some stage before the 1890s, this was in turn superseded by the chargeman being paid a sum equal to ten per cent of his weekly wages, deducted out of the "balance" earned by the gang. The rest of the balance was paid direct to the men along with their day wages, leaving the chargeman no opportunity to use his initiative in the matter of wages.¹⁰⁴

At the Midland Railway shops in Derby in the 1840s the company paid contract prices for the labour involved in certain jobs, such as painting a

second class railway carriage, and these prices were paid to gang leaders. The smiths, among others, were responsible for setting on their own staff and deciding how much each man was paid. By the 1890s the leading hand still contracted to take on work at a given price, but he and his assistants received stated weekly wages, and equitably divided the balance when the work was finished. However, when certain old carriages came in for repair, the work would sometimes still be given to one man who would hire others at weekly wages to do it.^{1es}

Piecework operated at the LNWR carriage shops at Wolverton, though there are few details. However, around 1900, in the shop building horse-drawn buses for the company, the foreman acted as a sub-contractor. "A gang of men signed a contract with a foreman to build a bus for a fixed price, which was always substantially less than the price allowed to the foreman by the Company. Each of the men had a copy of the agreement, but when the job had been completed they had to return their copies, so that the only record of the transaction remained with the foreman, as sub-contractor."^{1es}

The systems described at Swindon, Derby and Wolverton were very different from those in private coachmaking. In the latter the piecemaster, as well as financially benefitting from the system, tended to monopolise the more skilled work, thus perpetuating a certain division of labour. But in the railway company carriage shops, the division of labour was dictated by the larger volume of output (building and repair), the sheer size of railway carriages, and the traditional method of a gang building a complete vehicle. The chargeman or leading hand had a semi-managerial role, and

deflected criticism away from the overall employer by their increased share of the group reward and any opportunity they had to abuse that.

The railway contract shops also used variations of the system, and Craven's have already been mentioned earlier in this section. At Ashbury's contract shop in Manchester, employing some 2,000 in 1866, "the work, as far as possible, is given out to the foremen by contract or piecework, which is a well-known source of economy in every manufacture."¹⁸⁷ As detailed above, there was a strike by bodymakers here in 1874 over the equitable distribution of the balance. The Metropolitan works at Saltley in Birmingham employed piecemen, who in turn employed "underhands". However, the piecemen had no power to engage labour without the foreman's permission, and only the foreman could discharge. When, in 1875, a pieceman left without paying an underhand, the latter, presumably with the support of the Birmingham UKSC branch, took the company to court for the payment. The pieceman claimed he had not been paid by the company, who in turn claimed that he was responsible for paying the man. Under the circumstances prevailing at the company, the court found the underhand to be the servant of the company and not the pieceman. The company decided to appeal, and the UKSC took a vote of its members on whether it should nationally raise funds to defend the action, given the importance of the issue. The vote of nearly 10-1 to do so showed how seriously the members regarded it.¹⁸⁸

At the Lancaster Railway Carriage & Wagon works, when the men complained in 1905 that they should be able to earn a 25% balance when on piecework, it was decided that in future the pieceman should consult with the men before he fixed a price with the employer. This represented a democratising

of the traditional relationship, which was also experienced in the early motor industry.¹⁸⁹ There were, however, still some blatant abuses of the system, as evidenced at the Gloucester Railway Carriage and Wagon Company. Until 1911, "men were paid a weekly wage, and on top of that, piece-money was divided up each month among the foremen, who in turn divided it up among charge-hands known as "piece-bosses". The piece-bosses passed it on to their men at their own discretion, a florin here and a half-crown there, generally in the Railway Arms, beside the Company's offices. "For the piece-bosses themselves the system was an admirable one; they were the aristocracy of the Works. But the men also liked the old system, or at least they were not prepared to have it swept away by a new broom. They came out on strike for one day but were prepared to return, and on the first pay-day under the new system found their money so much increased that they went to talk the matter over with the former piece bosses. They, however, has made themselves scarce, and some did not reappear for several days."¹⁹⁰

The piecework systems described in this chapter allowed one group of craftsmen to substantially benefit from the labour of other craftsmen (and "unskilled" labour in the paint shops), whether it be as the "semi-employer" type of piecemaster in London coachmaking up until the first world war, or the employees who controlled the allocation of pay in many railway shops in the third, and sometimes also the last, quarter of the nineteenth century. The piecemaster system was a major factor in the weakness of London coachmaking trade unionism; and it also made shop organisation in the railway side of the industry even more difficult in the hostile anti-union environment operating in those workplaces.

CHAPTER 3 - RAILWAY CARRIAGE BUILDING

A. EARLY RAILWAY CARRIAGES

When the newly formed railway companies required carriages to transport passengers, the carriage bodies were invariably built by existing "private" coachbuilding firms. And when the companies embarked on their own carriage construction, their carriage department officers, as on the London and Birmingham Railway, were principally selected from those with experience in building horse-drawn vehicles. It was not surprising that "their efforts in carriage building resembled road coaches set up on a flat railway wagon" for "this is practically what they were".¹

According to the historian of nineteenth century railway carriages, "it is fairly correct to state that the railway carriage was directly developed from the coach." By that he meant the glass-coach, rather than the stage-coach. In addition to the droplight in each door, there was a quarter light on each side of the door, giving six windows to each compartment or body.² Each railway carriage was effectively the bodies of two or three horse coaches combined, the biggest difference with previous practice being in the frame, which had to be made very strong to withstand the locomotive's pull, the jolting when the train stopped, and the wear-and-tear produced by shunting.³

A Liverpool coachbuilder produced the early first-class carriages for the Liverpool & Manchester Railway, basically "two road coach bodies bolted

on legs of wood".⁴ Similarly, the original coaches of another early railway "were in reality composed of two distinct carriages, and were dowelled together at the headstocks and on the top side rails, with an elastic substance between them in order to allow the carriages a slight amount of radiation in passing over curves."⁵

There were many other continuities with private coachbuilding. Prints of early trains on the Liverpool & Manchester Railway show the first-class carriages painted yellow below the waist line and black above, which was a common stage-coach livery of the time.⁶ Wellington's coach, built in 1838 by the firm of Joseph Wright for his use on the London & Croydon Railway, similarly had its upper exterior panels painted black.⁷ Naming the first-class carriages was another stage-coach custom common in the 1830s.⁸ For a number of years there was even an arrangement whereby the wealthier railway passengers made the first part of a journey by coach, then had this same coach carried on a train, lashed to a match-truck, reverting to horse-drawn power to complete their journey. These carriage trucks were operating on the London & Southampton Railway in 1840; the GWR alone had 224 of them in 1849; and the M,S&L still had 11 as late as 1863.⁹

When the Grand Junction Railway decided to make the "Travelling Post Office" a permanent feature in 1838, the conventional curved panelling of the road coach was used, even though, with the vehicle not being divided into compartments, this was completely pointless. Early Royal Mail carriages consisted of 2½ bodies plus a "boot" for the mails. By 1838 on the London & Birmingham Railway the boot was incorporated as leg room for a

"bed" carriage, while the mail was stored in boxes on the roof. On both types the guard sat on an open box-seat on the roof.¹⁰

There was, however, a tremendous class distinction between first- and second-class carriages, and with it a very different standard of finish. This had substantial implications for the level of skill required of the workers building them, and the second-class carriage marks the beginning of the railway coach as a distinctive vehicle in its own right. For many years, most railway companies had open-sided carriages for their second-class provision. These were similar to the three-compartment first-class carriages, but had a single unglazed opening replacing the usual three windows on each side of the compartment.¹¹ The earliest second-class carriages of the Manchester & Leeds had wooden shutters in place of windows, and holes in the floor to allow water to drain out.¹² In 1840, the London & Birmingham Railway had 137 open second-class compared to only 36 closed second-class carriages.¹³ The London & Greenwich were unusual in the late 1830s in protecting most of their second-class passengers from the weather. They sat 24 inside one large saloon-type compartment, but they also had an outside seat for four passengers at each end of the carriage.¹⁴

The typical second-class carriage of the early Victorian period was also extremely cramped. The carriage generally had three compartments, but there was no padding or lining, and the compartment partitions only came up to shoulder-blade level. Following stage-coach custom, luggage rails were provided on the roofs, with box-seats for guards.¹⁵ In the early 1870s new carriages were being constructed for the Midland Railway from twenty year

old patterns, with luggage rails still on the roof, even though by then most other railways had dispensed with them.¹⁶

Such a spartan interior effectively cut out opportunities for the coach trimmer. The tiny Bodmin & Wadebridge Railway even had, in its three-compartment first-class carriages in the 1830s, cushions stuffed with hay. When the number of first-class passengers proved extremely small, one carriage was changed into a "composite" - its two outer compartments being turned into second-class, by removing all the trimming, hay and all.¹⁷ At Crewe in 1848, Francis Head watched an old first-class carriage being converted into a second-class, by taking out the lining, and then changing "large, fashionable, oval windows into little vulgar square ones".¹⁸

In the late 1830s and early 1840s the Great Western Railway's open second class carriages had six compartments seating twelve passengers each on wooden seats fifteen inches deep. These were extremely draughty at the best of times, a coroner's jury once returning a verdict that "the deceased died from cold and exposure travelling in a second-class carriage on the Great Western Railway". After 1844, with the passing of Gladstone's Act (see below), glass windows were provided.¹⁹

At this time, first-class railway travel was equivalent to travelling inside stage coaches, while second-class was similar to the conditions experienced by travellers on the outside of a stage coach. Initially, however, many railways made no provision for those who could not afford to travel by road coach and who had used a carrier's waggon. When they did make provision, it was extremely primitive. Thus when the directors of the

Manchester & Leeds Railway decided in 1838 to provide three classes of carriages, the specifications were as follows:

First-class - 6 inside, complete with everything conducive to comfort.

Second-class - 24 passengers; divisions chair high; no cushions; windows in door but none in panels.

Third-class - open boxes; no roofs; no buffer springs.²⁰

In April 1840, when the Glasgow, Paisley, Kilmarnock & Ayr Railway decided that their new third-class carriages should be made without seats, they also removed the seats from the existing "thirds".²¹ The Secretary of the GWR told a Parliamentary Committee in 1839 that his company would arrange to convey the lowest orders of passengers once a day in "carriages of an inferior description, at very slow speed at a very low price; perhaps, too, it may only be done at night."²² In fact, GWR third-class accommodation consisted of planks laid across open goods wagons. There was nothing to prevent people from falling out, and on Christmas Eve 1841, some did, and were killed when a night goods train ran into an earth slip. While the Manchester & Leeds provided glazed droplights from the beginning in their "thirds", most companies made these carriages as unpleasant as possible. The South Eastern Railway even had a definite policy of driving third-class passengers into the second-class.²³ There were some exceptions, and the Sheffield, Ashton-under-Lyne and Manchester Railway ordered some "thirds" in 1843, specifying seats and covered tops.²⁴

In 1844, however, Gladstone brought in a Bill obliging the railway companies to operate a daily train which should convey third-class passengers at a penny a mile in vehicles which should be provided with seats and fully protected from the weather "as far as consistent with the necessary admission of light and air". These became known as "Parliamentary" carriages, and were almost uniformly grim. Early GWR versions had ten plank seats, without any backs, the full width of the carriage, but had only one door each side. The London & South Western Railway had something like the traditional cattle wagon, with the sides open between the pillars above a waistline about four feet high. Tarpaulin curtains kept bad weather at bay.

Gladstone's Act did not kill the old open-sided third-class carriage. The law merely obliged the railway companies to run one train daily to convey passengers in more or less weatherproof carriages at a penny a mile. Nothing stopped inferior third-class carriages being marshalled in other trains. And open-sided thirds continued to be built for excursion traffic. Carriages built for Brighton excursion trains as late as 1864 were remarkably similar to the GWR open second-class of 1838, except they were smaller.²⁵

But, at a fairly early date, rather than build or order too many new carriages, railway companies stripped out and converted old second-class carriages into thirds. In the same way, "Parliamentary" carriages ended up as milk vans or goods brakes.²⁶ The number of third-class passengers increased by nearly six times between 1849 and 1870, while first- and second-class rose only fourfold. Passenger traffic receipts from third-

class tickets increased from 32.5% of the total revenue in 1849 to 43% in 1870.²⁷ Whether this was because of, or despite, the marginal increase in comfort, is not clear.

The Midland Railway led the way in 1875 in abolishing second class compartments, and upholstering the third class. The better second class compartments were upgraded and retrimmed as "firsts", while the majority were redesignated "thirds", the existing carriage linings being removed. A large number of ancient vehicles were scrapped entirely. The new third class carriages, whether formerly seconds or thirds, had padded seats, each compartment requiring 50 pounds of horsehair and 250 leather buttons. But there were no padded seat backs (until 1878) or curtains as the old seconds had had; and there was a new minimum standard of 6 feet between the third class partitions, compared to the 7½ feet for "firsts".²⁸

This "revolutionary" move by the Midland provoked strong reaction. "It was said to be an unfair attack on the second class of other companies, and an undue pampering of the working classes and of the third-class passengers generally". But the Midland's chairman retorted by saying the third class were his railway's best paying customers, and were entitled to some consideration. By the end of the century this change had been almost universally adopted by other railway companies in Britain.²⁹

B. NINETEENTH CENTURY RAILWAY CARRIAGE BUILDERS

The large number of small railway companies set up in the 1830s meant a large demand for railway carriages. While a few companies did build their own carriages almost from the very start, they invariably had to supplement their own efforts from outside suppliers. The majority probably bought the whole of their early needs of railway carriage bodies from outside.³⁰

While problems of transportation, and the need for coordination with the railway companies, would suggest that most of the latter got their initial rolling stock from local coachbuilders, there seems to have been a national market from a very early date.³¹ To begin with, no doubt, local coachbuilders were favoured, and many firms thus shared in the trade generated by the rapid expansion of the railway network and the ever expanding number of passenger carrying vehicles required. One writer has commented - "Coachbuilders did not suffer from the railway revolution like some other interests, such as the inns. With the new and magnificent scale of railway coachbuilding, many of them made a lot of money."³²

Most coachbuilders of any size shared in this bonanza of building. The Great Western Railway had many of its early carriage bodies built by David Davies of London, including the first of their royal saloons, made in 1840 and decorated by Webb of Old Bond Street. Another one built for royals by Davies in 1848 or 1850 was married to an iron frame built at the company's Swindon workshops. When, in 1852, the GWR introduced the first 8-wheel carriages to be employed in regular express passenger service by a British

railway, the bodies were built by Shacleford, and the iron frames at Swindon. Another leading London firm, Hoopers, built the London & Birmingham Railway carriage for the Dowager Queen Adelaide in 1842.³³

On a larger scale, Atkinson & Philipson of Newcastle had, within a few years of 1838, supplied over 20 railway companies, including thirteen of the companies which later formed the North Eastern Railway. As early as 1841, their accounts with the Edinburgh & Glasgow Railway alone showed an expenditure equivalent to 70 2nd class carriages.³⁴ The coachbuilder, Joseph Wright, who built Wellington's coach in 1838 for the Croydon line of what later became the South Eastern and Chatham Railway, was reported in 1842 to have produced all the carriages for the Northern & Eastern Railway, and the London & Blackwall. By 1849 his premises in the City had also built most of the new carriages for the southern division of the LNWR, and as well as supplying other English railways, he was producing "a great number" for Germany.³⁵

Some builders of railway carriages also produced freight rolling stock. For example, Richard Melling of Chorlton-on-Medlock built double-tiered sheep wagons and a carriage truck for the SA&M in 1843, and 7 1st class carriages for them in 1845; similarly, S. & T. Bowler built 15 coal wagons in 1842 and a number of cattle wagons and 3 second class carriages in 1843 for the same company. Bowler's 1843 carriages were also bought under the stipulation that the builder keep them in good repair for 12 months after delivery.³⁶ This was not uncommon at a time when most railway companies had very little workshop capacity.³⁷

It is clear that most coachbuilders at the time produced only the carriage bodies, and not the underframes and wheels; hence Adams's comments that the branches of the art of coachbuilding had been separated, and "the carriage builder for railroads has become a mere wooden box maker".³⁸ However, Adams built 8-wheeled carriages from 1847 at his Bow works for the Eastern Counties Railways, the South Eastern Railway, and others. He had set up his works to produce locomotives, and in 1848 and 1849 also built the earliest examples of what is now called the "railcar", with the engine and carriage combined on a single frame. These were bought by the Bristol & Exeter Railway, and the Eastern Counties. While Adams's railway work had to be abandoned, Joseph Wright was more successful. As early as 1844 he had patents for "multiple axle" railway carriages carried on 4-, 6-, or 8-wheeled bogies.³⁹

Railway contract shops

According to Timmins in 1866, the railway rolling stock trade was initially entirely in the hands of a few private firms, but these were "soon quite unequal to procure the large amount of capital to meet the pressing demands of the railway companies, who, year after year, were constantly finding themselves short of stock to work their rapidly-expanding traffic. This led to the establishment of works by the railway companies themselves, with the view of meeting the difficulty by becoming their own manufacturers, and, for a time, the plan succeeded; but, as the mileage increased, and, consequently, also the stock required to work it, they found that the principal part of their business would consist in keeping their existing stock in repair, and that they had but little time

for building new vehicles. The old system of employing contractors was again resorted to."⁴⁰

Just before the above account was published, however, the GWR had decided on building a huge carriage works at Swindon, which produced its first new stock in 1871, and the LNWR had set in motion the transfers of machinery that led to Wolverton becoming a major carriage works by 1877. The Midland Railway then built a huge carriage facility at Derby in the 1870s, and the NER opened a larger carriage works at York in 1884 (see Appendix 1 for details). But, once again, all these new facilities were unable to build all the new stock required by these companies.

Much later, Lord Aberconway noted, "No doubt for ordinary maintenance and repairs a great outlay was necessary, but it is generally agreed that the construction of locomotives, and probably of rolling stock, and certainly the rolling of steel rails, have been a financial mistake from the beginning. All these products could have been bought outside at less than it has cost the railway companies to make them."⁴¹ Whatever the financial consequences for the railway companies, one important result of the relatively large number of sites for railway carriage production was that production techniques in the railway company workshops were bound to be less advanced than in the railway contract shops. Even the latter were somewhat fettered by the railway companies' differing specifications for any new work contracted out.

The railway carriage contract industry was soon dominated by a small number of very large firms, some of which had originally been only wagon

works before branching out. Whatever their origins, these firms were not solely dependent on British trade, but operated on the world market.

Birmingham was undoubtedly the centre of this industry, railway carriage and wagon building reputedly starting there in 1838. The area was well suited for their manufacture, being in close proximity to coal and iron districts, and equally distant from the ports of London, Bristol, and Liverpool for their timber supplies.⁴²

The most important firm, which has dominated the industry to the present day, was the Metropolitan Railway Carriage and Wagon Co. Joseph Wright & Sons, the London coachbuilders, started making railway vehicles in Saltley in 1845, (the firm adopting its new title in 1862), and rapidly built up a world-wide export market.⁴³ Also in Saltley, Brown & Marshalls, a local coachbuilder, started to get large orders for railway carriages in the 1840s, from companies including the Midland and the London & Birmingham. By the late nineteenth century, this company, then known as Brown, Marshalls & Co, were selling substantially more rolling stock abroad, especially to India and Argentina, than they sold in Britain.⁴⁴

A third Saltley-based company, the Midland Waggon Co, began building wagons there in 1864. It produced some carriages there for the Midland Railway in the mid-1870s, but following its take-over of the Abbey Works at Shrewsbury in 1877 (and a change of name to the Midland Railway Carriage & Wagon Co), it did not build any carriages in Birmingham until 1912. The Shrewsbury plant built all its passenger vehicles until then when both the Shrewsbury and the original Saltley works were closed and all work transferred to a new plant in Washwood Heath, near Saltley.⁴⁵

There were also two other contract shops in Birmingham. The Birmingham Railway Carriage & Wagon Co, initially known as the Birmingham Wagon Co, took over works either side of the Birmingham, Wolverhampton & Dudley Railway (later owned by the GWR), on the border between Handsworth and Smethwick in 1854. Much of its nineteenth century business was with railways in Argentina.⁴⁶ The other was the Oldbury Railway Carriage & Wagon Co, known for many years as "The Railway Carriage Company". This was established by Bromsgrove Station in 1847, moving to Oldbury in 1853-54. The bulk of its export trade was with India.⁴⁷

Outside of Birmingham, the longest established firm was the Ashbury Railway Carriage & Iron Co, founded in 1837, and building rolling stock for the Liverpool & Manchester, the Manchester & Leeds, the East Lancs, and other early lines. In 1846 it moved to Openshaw, alongside the new S,A&M Railway, though it kept open its Ardwick works for another 20 years. Its most important customer was the local Manchester, Sheffield & Lincs Railway (the later Great Central Railway), and its export trade was less extensive than the Birmingham firms.⁴⁸ Also in the north west was the Lancaster Wagon Co, incorporated in 1863, which grew out of an amalgamation of several small firms. Its first railway carriage was built in 1866, and its name changed to the Lancaster Railway Carriage & Wagon Co in 1892.⁴⁹

Elsewhere there were probably only six other firms worthy of note, some entering the industry very late in the century. The Gloucester Railway Carriage & Wagon Co was established in 1860 as the Gloucester Wagon Co, and started building railway carriages in the 1860s. Its main business was the supply of wagons to industries in south Wales, though it also maintained a

thriving business in all types of horse-drawn vehicle.⁵⁰ The Bristol Wagon and Carriage Company's original premises dated back to at least 1851 as a road vehicle business, moving into rolling stock manufacture in 1866.⁵¹ Cravens of Darnall near Sheffield was established in 1867,⁵² while the Leeds Forge did not take up rolling stock manufacture until 1887, initially concentrating on underframes. It is not clear when it produced its first complete vehicle, but it built a separate carriage works in 1908.⁵³

Like many other rolling stock firms, the Scottish company of Hurst Nelson concentrated on wagons, building its first passenger rolling stock at its new Motherwell works in 1896. By 1914 it was reckoned to be the second largest rolling stock manufacturer in Britain.⁵⁴ Brush of Loughborough also built some railway rolling stock at its Falcon works in the 1890s, but this took second place to tramcar building for a number of years, with Brush re-entering the railway market in 1905.⁵⁵

These firms were all very large employers of labour. In 1866 it was estimated that the five Birmingham firms employed at least 3,000, and this was alleged to have quadrupled by 1908.⁵⁶ Figures for individual firms are not easily available, and obviously reflect fluctuations in trade, but they give us some indication. Thus Ashbury's employed about 2,000 in 1866, 1,500 in 1890, 1,600-1,800 in 1898, and nearly 1,800 in 1902; Oldbury about 1,000 in 1869, 700-800 in 1891, but only 261 in 1892; the Gloucester works 360 in 1861, and about 1,000 in 1892; the Bristol Wagon and Carriage Company about 1,000 in 1908; while the Metropolitan works at Saltley employed about 800 in 1853, 1,000 in 1892, and 3,000 in 1910.⁵⁷

As well as the railway carriage body side, these firms were generally engaged in wagon manufacture, and also produced a substantial amount of iron work for underframes. The forge at Oldbury's alone had 84 fires in 1869, with one smith and 2 strikers operating each one; while Ashbury's is credited with about 200 smiths' fires in operation in 1866, and 150 in 1890. The Bristol works had 200 fires in the smiths' shop in 1902, but less than 100 some six years later.⁵⁹ Those workers who would have been eligible for the UKSC would have been a relatively small proportion of the total workforce; but given the huge size of these factories, they were undoubtedly major employers of coachmakers in their own right.

The first major rationalisation in the railway contract industry occurred at the beginning of the twentieth century, when, in 1902, an amalgamation of 5 rolling stock firms along with one major supplier took place to form the Metropolitan Amalgamated. The firms in question were the Metropolitan, Olbury, and Brown, Marshalls of Birmingham, along with the Lancaster and Ashbury's, as well as the Wednesbury supplier firm of Patent Shaft & Axeltree Co, which alone employed some 4,000 men on three rail-connected sites.⁶⁰

At the time, according to J.H.Price, British firms were supplying two thirds of the world market in railway carriages, and were at the height of their power. But a gradual decline then set in, as various overseas railways started to build their own rolling stock. The 1902 merger was a farsighted move, inspired by Frank Dudley Docker, to cut capacity in the industry; this would keep keep profit levels from falling as a result of a price cutting war caused by future falling demand (something that happened

in the electric tram industry). A number of the larger firms refused to join this scheme, and, in the short run, at least, capacity actually rose in the industry when Metropolitan took over the Castle Car Works, the former Milnes tramcar factory, at Hadley in Shropshire in 1905.

However, at the same time the Britannia works of Brown, Marshalls was run down. The Hadley works built both carriages and wagons until 1908 when a general falling off of trade led to its closure, the works later being bought by Joseph Sankey. A good number of Hadley employees were, however, offered jobs at the various Birmingham factories. In the same year Brown, Marshalls works were closed, later being sold to Wolseley; and the Lancaster factory, which had already had its carriage work moved elsewhere, was also shut, with some men and machinery being transferred to the Openshaw and Saltley factories.⁶⁰

The railway company workshops

The expansion of the railway network was continuous from the 1830s until the first world war. Over 500 miles of track opened by 1838 had increased to some 2,400 by the end of 1845. The most rapid period of expansion saw the route mileage expand to about 5,800 four years later, and 6,700 in another two years. This doubled to somewhere between 13,500 and 15,500 miles by 1870, after which, while the system grew to over 23,000 miles by 1914, this was now mainly through the construction of branch and feeder lines.⁶¹

While the average route mileage of companies which were members of the Railway Clearing House in 1846 was only 41 miles, already large-scale amalgamations were taking place. By 1848, 159 older companies had been unified into 22 undertakings, and this process continued. The Great Western Railway alone was, before the 1921 Act, the product of 115 separate companies, while six of the major railways had taken over more than 300 companies.⁶²

The bigger railway companies inherited many workshops along with their acquisitions. These would be kept open initially, but eventually decisions were made to centralise workshop capacity, and new carriage construction would be restricted usually to one site in each company. Quite often the smaller workshops were retained as repair shops, or even only for running repairs, if they were suitably geographically situated. Given the variegated nature of the inherited rolling stock, which would be kept in service for as long as possible, the workshops staff had to be capable of dealing with almost anything in their trade.

Coachmakers were obliged to take employment wherever workshops were established. With the constant round of company amalgamations, coachmakers, like the other necessary workshop trades, experienced a fair degree of insecurity in their employment. For coachmakers, this was particularly severe in the period until the end of the 1870s, by which time most of the large carriage workshops had been established. The main workshop sites reflected the needs of the railway companies. Thus, Crewe, where coachmakers worked from the 1840s, was effectively a creation of the railways; Ashford in the 1850s was not a great deal bigger; and Wolverton

and Swindon, where carriage works were established in the late 1860s and early 1870s, were pure and simple "railway towns", which were eventually to become the home of the two largest railway branches in the union. (For further details on the spread of railway workshops, see Appendix 1.)

However, while UKSC members may have found the combination of hostile employers and rural isolation difficult to cope with in the mid-nineteenth century, urban Manchester, with strong coachmaking union traditions, was also a major railway centre. The national scatter of railway workshops consolidated the existing pattern of dispersed coachmaking employment, but brought at least three new features - firstly, the establishment of a number of very large (in relation to "private" coachmaking), and, in some cases, enormous, factories; secondly, the creation of a number of alternative major centres of employment to London, with its very weak trade unionism; and, thirdly, (and not without some initial problems) it broadened out the scope of the coachmaking trade. The UKSC's attempts to grapple with both the railway company workshops and the contract shops will be explored in the next section.

C. THE UKSC AND RAILWAY SHOPS

The delegate meeting which re-established the UKSC in April 1848 sent out a circular cataloguing a programme of action. It included the suggestion that a committee be formed in Manchester to draw up a petition to present to the directors of all the railways in the UK "to show them the injustice of employing men who are not coachmakers" and "to request them to employ none but legal coachmakers". The circular stated that the "withholding from us of Railway work" was a "great injustice", and highlighted "the fearful sacrifice of life and limb which may occur by the imperfect construction of railway carriages."⁶³

Many coachmakers were already employed by railway companies - for example, 146 coachbuilders in the London & Birmingham Railway coach repair department (probably at Euston) signed a round robin in 1846.⁶⁴ But cognate trades, such as joiners, wheelwrights and wagon makers were probably also used to some extent. Further, in both the railway companies' workshops and the railway contract shops, the UKSC faced antagonism to any form of trade union activity, which meant that grievances could not usually be resolved. Brown & Marshalls, in Birmingham, was blacked during the 1850s, but in 1860 the EC used their discretion to lift the blacking, arguing that "the evil we struck against, cannot by our own abilities, at present be remedied. They have shown what they can do without us; therefore, by withholding our men, we are not hurting them, but ourselves."⁶⁵

The skill level of railway shop members also caused concern. When the Chester branch proposed an unsuccessful motion in 1857 that the Society be open for 6 months to anyone having spent 7 years in a coachmaking shop and "who may be considered capable of earning his living by the trade", the rider "but in no case shall this proposition apply to Railway shops" was added.⁶⁶ This proposal obviously touched a raw nerve, and the next surviving quaterly report, fifteen months later, carried the notice "For the information of some members who have doubts, an Apprentice serving his time exclusively to any branch in a Railway Carriage department (7 years according to Rule 2) is eligible to become a member." This was still inserted over a year later.⁶⁷

The EC then pronounced in 1863 that "we know by experience that it is useless attempting to remedy any alleged grievances that may exist" in railway shops. They also argued that a large proportion of the men recently on travel had been based in railway shops and were "incompetent" to take a situation in a "gentleman's" shop when offered to them. They therefore proposed a rule change that any grievance "in any shop or place where railway carriages are built, but where no ordinary coach building (gentlemen's work) is carried on", should not be recognised and, in return, members working in these shops should not pay strike levy for others. Additionally, apprentices who had "wholly served their time" in railway shops, could not join the Society (present members excepted).⁶⁸

Not surprisingly this drew an immediate reaction from the Birmingham branch, the largest centre of contract railway carriage works, and they circularised all branches advising against the proposed rule changes. The

EC countered in their own circular that if railway shops were acknowledged, "a reckless EC may at any time throw away hundreds of pounds for no purpose", and that, "better have 2,000 good members, than 5,000, and one half bad ones". This argument prefigures those that were to arise in the 1920s and 1930s, regarding the recruitment of members who would be a drain on society unemployment benefit because they did not have the all round skills to take employment in any section of the trade.

The executive did concede one point to Birmingham, and amended their proposed rule change to add "All sons of coachmakers who are serving their time in any Railway shop previous to this proposition becoming law, shall be allowed the privilege of joining the United Kingdom Society of Coachmakers, when they are of proper age to do so; but any son being placed in a Railway shop after such becoming law shall not be allowed to join this Society."⁶⁹ These proposals were passed, and in 1866, when a rule was introduced on the fining and expulsion of piecemasters who employed non-society men, it specifically excluded piecemasters in railway shops. This last rule change was questioned, and soon afterwards all the exemptions for railway shop members were dropped, without any significant explanation.⁷⁰

In practice, the UKSC remained fairly impotent in the railway shops. In 1869 there were 27 "blacks" working at Brown & Marshalls (there having been 30 in 1859), and 26 at McNaughts of Worcester, another railway contract shop. These were coachmakers who had worked in a "black" shop and not subsequently made peace with the Society by paying the necessary fines. As both shops' blacking had been lifted in the early 1860s, the majority of

these "blacks" presumably dated from at least then, and demonstrated the Society's weakness.⁷¹

It is difficult to estimate the UKSC membership in the railway shops, except for the more obvious railway town branches. As pointed out earlier in this chapter, many of the big carriage workshops were not built until the 1870s, and it is only then that we can chart the Society's progress in the railway field with any confidence. Enough evidence does exist to build up a picture of UKSC membership in five towns where there was substantial railway carriage building - Derby, Birmingham and Manchester, and the two "railway towns" of Swindon and Wolverton.

While the Swindon and Wolverton works were based in rural areas with little alternative coachmaking employment, Derby had one of the largest private coachmaking shops in the country, Holmes.⁷² Derby branch membership was over 100 in the late 1850s, 150 ten years later, and grew rapidly from some 200 in 1875 to 350 in 1878, along with the big increase in work at the Midland Railway works at the time; the last figure was reckoned to be nearly all of the trade in Derby.⁷³ Reports by the Carriage & Wagon Superintendent at Derby in 1876 and 1877 show that, with the expansion of work, the Midland Railway came up against a general shortage of skilled and unskilled labour, especially among coach bodymakers. Labour turnover at the carriage and wagon works was over 50% in 1874, and significantly higher the next year. One bone of contention was the increasing amount of piecework, as a result of which many men left rather than work it.

The Company unsuccessfully advertised for labour through UKSC channels at the beginning of 1877. Very few were obtained by the Outdoor Foremen at the railway's principal stations in Manchester, Birmingham, Bristol and Gloucester, which towns all had railway contract shops. The Superintendent recognised that men in these shops were generally reluctant to leave new work and come to Derby to do "very dirty" repair work. There was also the problem of paying attractive enough wages, especially after a dispute led to a 2s per week increase in the Birmingham carriage building firms in the mid-1870s. Eventually, two wage increases in two years, and "direct letters to the employees of nearly every Railway Carriage Building Firm and to several of the Railway Companies" about 27 men were recruited.⁷⁴

The rapid rise in membership at Derby in the late 1870s was shattered by the 1879 strike in Lancashire and Yorkshire and its accompanying high levies and increased subscriptions. Membership dropped by over 200 in 1879 alone, and after the mid-1880s it settled below 100, fluctuating between about 65 and 100 members until a big surge of membership from 1917 onwards. This figure made little impact on the 500-600 coachmakers reckoned to be working in the town in the early 1890s. Many of the non-unionists at that time had been members before 1879 but were by then too old to rejoin; some were too old to qualify for superannuation benefit and objected to paying for it; while others, already members of friendly societies, thought the 1s per week subscription too high. The Derby branch even sent a representative to two Delegate Meetings with instructions to try to get a 6d per week contribution, with superannuation and sick benefit as optional extras.⁷⁵

There were no major railway company workshops in Birmingham, though, as detailed in Appendix 1, the LNWR leased workshop space at Saltley in the 1850s and 1860s, and the Midland Railway's Bromsgrove repair shops employed some 600 men in the late 1870s. The major employers were the contract shops, all five of which were building carriages during the 1870s.

Birmingham was always one of the largest centres of UKSC membership after Manchester and Liverpool, and the local branch had more than 300 members during most of the 1860s and 1870s. While membership fluctuated regularly, the peak was the 440 recorded at the end of 1876. The majority of these probably worked in the contract shops, though there were at least 17 coachmaking shops in the area in the mid-1860s.⁷⁶ From 1872 there was also a separate branch for Oldbury,⁷⁷ presumably based on the railway carriage works there, with around 40 to 50 members in the late 1870s. As mentioned in chapter 1, there was a movement of the trade in Birmingham for the 54 hour week in 1871-72. Finishers at the Metropolitan, Oldbury, and Brown, Marshalls works met together soon afterwards and claimed a 2s rise. Whether this was under UKSC auspices is not clear, but it was eventually settled when after conferences between representatives of the directors and the men's representatives, the companies agreed to increase contract prices by 10% from August 1st 1872.⁷⁸

In September that year, a society known as the Amalgamated Society of Railway Carriage and Wagon Operatives was formed from workers at the 5 contract shops; and soon afterwards, a mass meeting of the railway carriage smiths voted to cease overtime and work daywork from the beginning of

October in pursuit of their demand for a 10% piecework increase. The smiths worked daywork for a period before agreeing to a compromise settlement.⁷⁹

Birmingham, which had also won the 54 hours in 1872, was pushed back to 57 hours in the general depression of 1879, though there does not appear to have been a strike or lock out on the issue. Like Derby, in the wake of a long period of UKSC levies, raised subscriptions and reduced benefits, Birmingham branch membership fell. A loss of about 100 members occurred during 1879, with membership dipping below 200 in 1881. This was followed by a slow decline to about 150, before membership started to pick up again in 1889. A strike in 1891 for the 54 hours by 300 men was successful after two weeks, though the UKSC membership in Birmingham and Oldbury (which had been hit relatively much harder) only totalled 215 at the end of 1892. There was an estimated minimum of 300 skilled coachmakers outside of the Society in the area, of whom not more than 100 were eligible to join, the others being older men who had mainly been members before 1879, but were too old to be re-admitted.

The railway carriage works in Birmingham were very poorly organised in the early 1890s, there being large numbers of unskilled men making parts of coaches in shops full of boys. The wagon shops were almost entirely unorganised except for a few in the railway carpenters' society. The sub-contract system was also still in operation, though there are no details.⁸⁰

In Manchester, it was not until the amalgamation with the "Independents" in 1866 (see chapter 1) that the UKSC branch was established as significantly the largest in the union, although the seat of government

remained in Liverpool. Figures are easier to come by here, for separate branches were eventually formed for the two major concentrations of railway members. In 1870, members working at the Gorton rail workshops and Ashbury's contract shop applied to start their own (Openshaw) branch,⁹¹ which initially had 90 members, but fairly rapidly stabilised around the 150 mark, until 1878, when membership dropped by 30 in the first six months of the year.⁹² The Lancs & Yorks Railway workshops were transferred to Newton Heath in the mid-1870s, the Manchester branch claiming nearly 200 members there in 1878, with only 3 non-unionist coachmakers in the works.

A three week strike by members at Ashbury's in October 1878 successfully resisted wage reductions before lock-outs and strikes occurred at Gorton and Newton Heath at the end of November over the same issue.⁹³ No union records survive of the length of these disputes, but they were both swallowed up in the much bigger 1879 dispute. The Gorton and Newton Heath coachmakers would have been subject to levies when they returned to work, to support the others on strike or locked out. But the Openshaw and Manchester branches did not decline to nearly the same extent as Derby. Obviously the proximity of the wider dispute was a factor in sustaining membership, but the more established nature of coachmaking trade unionism in Manchester must also have contributed. Openshaw branch, already down to 121 before the disputes started, fell to 91 by December 1879, and apart from a brief dip below this, maintained roughly that number for the next 2 years. By 1886, if not before, it had recovered to its pre-strike figure, and, with fluctuations, reached 200 members by the turn of the century.

The Manchester branch did lose over 200 members, about a quarter of its membership, in the three years after the end of 1878, and it had far from fully recovered by the time the Newton Heath members formed their own branch in 1892 with some 253 members at the end of that year, out of an estimated 2-300 coachmakers in the works.⁹⁴ This branch grew rapidly to nearly double that figure by the end of the century, and the two major concentrations of UKSC railway members in Manchester had thus survived the 1879 disaster and grown.

Both Swindon and Wolverton had long established locomotive workshops before carriage shops were started in the late 1860s. As early as 1851, the Wolverton workshops accounted for 85% of all employed people in the town, while in New Swindon the figure was 92%.⁹⁵ Despite their remoteness from major centres of industrial population, a core of trade union membership was established early. The ASE, for example, had an average of over 200 members at Swindon from 1853 until at least 1868, while their Wolverton branch was over 300 strong from 1861 to 1866.⁹⁶

With the building of the GWR carriage works, Swindon branch was opened in May 1869, there being at that time only 12 members working there, paying to eight different branches. By the middle of 1871, membership had grown to 133, but a year later the branch secretary was discharged when his name appeared officially on a memorial soliciting a wage increase, despite his 24 years in GWR service.⁹⁷ Whether or not connected with this event, membership slumped to 64 by early 1873. However, this did not last long and membership was soon over the 100 mark, steadily increasing to 160 in March 1878. Fluctuations in activity in the works mask the true extent of the

impact of the 1879 dispute. 35 members lost in the middle six months of 1878 compared with 4 members acutally gained in 1879, followed by 48 lost in 1880. After this, the branch stabilised, and a surge of growth in the late 1880s led to it maintaining over 200 members right through the 1890s.

From at least 1884 the branch regularly elected shop secretaries for the four main areas - new work, repairs, paint, and trim. And, apart from a gap from 1885 to 1890, "shop delegates" were also elected "to cooperate with the shop secretaries", though it is not entirely clear what they did. And, during the 1890's, two members went round the works each quarter to try to persuade non-unionist coachmakers to join the UKSC. In the winter of 1895/96, the branch claimed there was only one non-unionist in the body shop. But, early in the twentieth century, Alfred Williams recalled the painters and finishers being put on piecework during a slack period of short time and suspensions - "Few of the men belonged to a trade union, or they might have opposed the terms and made a better bargain; as it was they were completely at the mercy of the managers and foremen".²²

Wolverton was hit much harder than Swindon by the events of 1879. The LNWR works there had started carriage building in 1865, and a UKSC branch set up immediately, with 65 members at the end of the first quarter.²³ [These members do not appear to have come from the Crewe carriage shops, which had a solid core of between 60 and 90 members from the early 1850s to late 1860, when the branch more than halved, with work going to Saltley; when Wolverton carriage works were set up, there was no discernible change in the remaining Crewe branch membership.] Within a year there were over 100 members, and for most of the 1870s membership fluctuated around the 200

mark. 1879 was catastrophic with membership down from 191 to 91, and although it had picked up to the 120-130 mark within less than a year, this remained the average figure until the end of the century. Wolverton branch, like Derby, sent out a circular in the mid-1880's, propagandising for a reduction in contributions.⁹⁰

Outside of the above five towns, the UKSC fared relatively badly in railway centres. This was particularly so in the south of England. While a separate branch was set up at Ashford in the early 1850s,⁹¹ its membership was small, being in the 30-40 range for most of the third quarter of the century. An accredited 53 members in August 1879 dropped to 16 by December, and this steadily declined to a mere 6 by 1900. An attempt to recruit members at both Ashford and Brighton in 1904 was a complete failure. In both towns, only existing members attended a meeting, and it was thought that this was because the workforce considered their jobs secure and, importantly, had a good pension scheme. The ASE secretary said his union had often tried to organise the Ashford works, but unsuccessfully.⁹² When the Nine Elms carriage and wagon works were transferred to Eastleigh in the early 1890s, a nucleus of craftsmen also moved. The Eastleigh branch membership of 46 at the end of 1892 had increased to 83 five years later.

In London, it is possible to hazard a guess at the membership only in the Stratford works. One member was recorded in the Stratford branch in the early 1850s, and this increased to only 20 by the beginning of the 1870s, after which it rapidly exceeded 50. The year 1879 saw it slump from 61 to 14, and it is likely that subsequent increases which took it back to 60 in 1898 were more related to West Ham and East Ham trams than the railway

works. Generally, the low overall UKSC membership in London almost certainly included low membership at the various other railway workshops and depots at Longhedge, Nine Elms, Bow, New Cross, and so on.

In the north of England the railway carriage shops at Doncaster and York also had few UKSC members. Both towns had other coachmaking employment, though York was generally larger, reaching nearly 100 members in the mid-1860s, but few of these were at the railway works. In 1899 it was estimated that only 7 of approximately 200 coachmakers at the NER works there were in the UKSC though this increased slightly in the next few months with an increase in the labour force.³³ Scotland was no better, with, in 1878, a combined total of only 60 members in the two big Glasgow shops of St. Rollox and Cowlairs, and only one at each of the St. Margarets (Edinburgh) and Perth shops.³⁴ Eventually, in 1913, the Glasgow railway members formed their own branch at Springburn, with over 200 members.³⁵

Elsewhere there were small pockets of members at the smaller carriage workshops, in the locomotive paint shops, and at the contract shops not mentioned so far, but given the size of many of the workshops, it is clear that the UKSC entered the twentieth century with significant railway membership only in Manchester, but with useful bases in Birmingham, Swindon and Wolverton. While their railway membership was small in relation to railway coachmaking employment, it was an important component of the UKSC's overall membership.

D. THE CHALLENGE OF THE GRWU

Like many other craft unions, the UKSC's potential area of recruitment in the railway company workshops was limited by its definition of a craftsman, and its inability to recruit workers over a certain age, because of the need to fund its superannuation benefit. As a result, the vast majority of railway shopmen were in no union at all. But this situation was to change fundamentally a quarter of a century after the formation of the General Railway Workers Union in 1889. This "new union" was open to "the workers of all grades employed on or in connection with the Railways of the United Kingdom". In practice its membership was generally confined to grades largely untouched by the ASRS, among them being the shopmen.⁹⁶

An initial burst of recruitment reputedly took the GRWU to 14,000 members during 1889, though it claimed only 10,287 at the end of the year, over half of which were concentrated in London and Middlesex.⁹⁷ Its 1892 Congress claimed 9,983 members, but this figure was down to 7,412 by the end of that year; and from 1894 to 1905 its membership fluctuated between three and five thousand.⁹⁸ It is difficult to find out much about its early activities, but it does appear to have had membership at, or contact with, workshops at Swindon, Newton Abbot, and Kensal Green on the GWR; Derby and Bromsgrove on the Midland; and Crewe, Ipswich, and Bow.⁹⁹

In the winter of 1890-91, it recruited very heavily in Swindon. From some 24 members there early in 1890, during 6 weeks in September and October that year they enrolled nearly 2,000. The GRWU took the initiative

in organising a demonstration in the town during this period, inviting other unions, including the Coachmakers, to participate.¹⁰⁰ By February 1891 the claimed Swindon membership was up to nearly 3,000, and a month later there were even suggestions of 4,000. Why it should have grown so quickly there is not clear. Of course, these membership claims could have been inflated, as obviously were the 20-25,000 claimed nationally in their organ, the Railway Express, in mid-1891.¹⁰¹ And, given the union's fairly rapid membership decline in the early 1890s, most of the Swindon gains evaporated quickly. But the rapidity of such recruitment was a warning sign the craft unions ignored at their peril.

The shopmen formed a sizeable minority within the GRWU, and proved to be a very significant factor in the future shape of the NUR. A 1906 GRWU membership figure of 5,831 included some 800 shopmen, while at an amalgamation conference in February 1906, the union's general secretary claimed that they had recruited some 1,500 shopmen.¹⁰² The GRWU general secretary had told the 1892 Royal Commission that they only took as members "those who are not eligible for their respective trade organisations", and that they would not take engineers, builders, joiners etc, as "that would be poaching on the other trade unions".¹⁰³ Similarly, in 1906, Richard Bell of the ASRS admitted that hundreds of applications for membership of his union came each year from carpenters, joiners, coach builders, boilermakers and others. These were refused as "they were not railwaymen" according to the ASRS definition of the term. At the 1906 amalgamation conference an ASRS delegate pointed out that the ASRS maximum subscription was 5d per week compared to the ASE's one shilling and that they could for this reason have a large influx, but this would mean "poaching" craft union members.¹⁰⁴

Two schemes for amalgamation with the ASRS fell through in the 1890's. And in 1906, the GRWU had to abandon amalgamation talks because their growing proportion of shopmen members would have been excluded, and they feared the possibility of another trade union being established exclusively for that grade.¹⁰⁵ At a conference in October 1907 dealing with a proposed federation of railway unions, a GRWU delegate from Brighton, representing 450 shopmen there, demonstrated that union's continuing reluctance to recruit craftsmen. "We, in Brighton, do not take the mechanics in our union, we say that mechanics should join their own trade unions, but how about mechanics who will not join their own trade unions? They come before our branch and ask to be made members, and nine times out of ten we vote against them, because we say 'you ought to join what you belong to'".¹⁰⁶

The union had a number of branches of shopmen, mainly on the North Eastern Railway, whose 1908 membership was as follows:¹⁰⁷

Table 3:1 GRWU selected shopmen branch membership, 1908.

NER:	Darlington No.1	288
	Darlington No.2	103
	Gateshead	136
	New Shildon	261
	York	81
and elsewhere:	Brighton	288
	Newton Heath	268

At a further conference with the ASRS in December 1909, the GRWU claimed 2,749 shopmen out of a total membership of 6,061.¹⁰⁸ This conference

removed the workshop stumbling block when the ASRS delegates agreed to admit existing shopmen members of the GRWU, and all shopmen who had not served an apprenticeship to qualify them as craftsmen. This latter point was important as the character of workshop employment had been changing. According to one GRWU delegate, "They did not want joiners so much in the shops now as they did handymen, who could knock together the parts made by machinery". Another delegate declared that it would be difficult to find out where the skilled man left off and the unskilled man began. These "unqualified handymen" were ineligible for membership of the various craft unions and would remain unorganised unless specifically catered for.

A GRWU delegate from the NER Heaton workshop argued that too much consideration had been given to the craft unions, as these unions were largely responsible for the low rate of wages in the railway shops. For example, one society had allowed blacksmiths to work for 12 shillings a week less than they would have allowed in an ordinary engineering works, on the grounds of regularity of employment in railway shops. But, the delegate claimed, the workshops were being run on similar lines to contract shops. On the NER, engineers, turners or fitters, when they had finished their piece jobs had to go home until there was another piece job for them.

At Heaton, they made sure whether any man was eligible for a trade society before they entertained their application for GRWU membership. But "they had men engaged as fitters who could not work as fitters in a proper engineers shop, and were not eligible for the engineers society.....Again, the blacksmiths' society did not recognise the striker at all...The same difficulty arose in regard to men who were known as wagon-wrights, and men

who made railway barrows. These men were not skilled joiners and could not join the trade society...". The Brighton delegate stated that they refused to take in men who were eligible for the ASE.

However, the approximately 6,250-strong GRWU membership voted in May 1910 against amalgamation with the ASRS under the terms offered despite heavy votes in favour in the workshop centres of Brighton, Eastleigh, and Newton Heath.¹⁰⁹ A further meeting on amalgamation took place at the end of 1911 and beginning of 1912, by which time the GRWU had 10,000 shopmen members, 2,700 of them in York alone. The ASRS delegation finally removed the clause excluding skilled workmen from membership in the amalgamated union. The then 23,000-strong GRWU voted the necessary two-thirds majority early in 1912, and the NUR formally dated from March 1913.¹¹⁰

By this time the GRWU was aggressively recruiting shopmen. In December 1912 they estimated that just over half their approximately 25,000 members were workshop staff. They recruited craftsmen and labourers alike. In the workshops of the North Eastern Railway they had very high levels of membership, including a large proportion of the skilled mechanics. They estimated 95% membership at Gateshead and Heaton; more than 75% at Shildon, including about 1,150 of the 1,200 employed at the wagon works; about 75% at York; and 50% at Darlington. This was despite there being no method of settling disputes by negotiation, as the workshops were not covered by the North Eastern conciliation scheme. The union also claimed considerable membership at the LBSCR works at Ashford, where the UKSC were almost non-existent.¹¹¹ Its membership was, however, subject to a high turnover in 1912, as the following table demonstrates.

Table 3:2 GRWU membership, 1910-1912¹¹²

	<u>Membership</u> <u>Start of year</u>	<u>Joined</u>	<u>Left</u>	<u>Membership</u> <u>End of year</u>
1910	6,008	2,701	1,425	7,284
1911	7,284	18,607	2,832	23,059
1912	23,059	7,002	9,743	20,318

According to Bagwell, at the time of the NUR's formation, only 20% of the railway companies' workshop staff of 73,000 had been organised by the more than 80 craft unions. Within 6 months the NUR organizers had enrolled 30,000 workshop staff, and by the end of 1916 had more than 50,000 in membership.¹¹³

The most important encroachments on UKSC territory occurred at York, with perhaps over 200 coachmaker members at the time of the NUR's formation, plus numbers of others the UKSC/NUVB would have later seen as potential recruits (see Appendix 2). The GRWU had generally had more impact on the NER than elsewhere, and York was the company's major carriage shops. It was here that a William Dobbie changed his union from the UKSC to the GRWU, to the great consternation of the former. Dobbie, a coach painter by trade, had joined the UKSC about 1897, was elected on the York branch committee by 1904, was branch president in 1906, and secretary from 1907. In 1910 he was nominated by York branch for the union's vacant assistant secretary post, the executive, and the TUC delegation. By 1912 he was also secretary of York Trades Council, and a York town councillor. The circumstances of his transfer seem rather mysterious.¹¹⁴

According to the York UKSC minute book, he resigned from the union sometime in June or July 1912. But, according to GRWU records he seems to have been on their executive in 1911; and an NUR official later referred to him as the President of the GRWU at the time of its fusion, having been a member for many years. He was certainly at a special NUR executive meeting in April 1913, and was elected to the NUR EC in December that year.¹¹⁵ His public defection was a blow to the UKSC, but occurred after the mass recruitment into the GRWU at York in 1911. The GRWU seems to have generally recruited non-unionist coachmakers at York, rather than "poached" UKSC members. The dates of joining the GRWU of a number of coach painters at York show a spread from 1906 onwards, though more joined in 1911 than any other single year.¹¹⁶ By contrast, York UKSC membership shows a significant dip in 1909 (possibly the end of the burst of new carriage construction), followed by a decade of less than 50 members.

GRWU membership, at the time of the NUR's formation, shows the inroads made into UKSC "territory" at York. Apart from ten workshops with less than ten GRWU coachmakers/painters/trimmers/finishers, there were substantial pockets of membership at Ashford, Brighton, Derby, Wolverton, Gorton, and Newton Heath. (Interestingly Swindon had only 2 coach finishers and 1 leather trimmer in GRWU membership, despite the earlier 1890-91 upsurge in GRWU membership there.) The figures are given in Appendix 2.

GRWU craft membership in other workshops also dated back some years. Thus of the five coach painters in Doncaster branch at the time of the NUR fusion, 2 had joined in 1903, and 3 in 1904. A number of Newton Heath coachmakers dated their membership back to 1904, 1905, and 1907. At the

West Brompton works of the City & South London Railway, one coach trimmer dated his GRWU membership from 1898. In most centres where the information is available, it appears that there was a definite small core of long-standing GRWU coachmakers, while the majority of their coachmaker members joined in 1911-12. Why did coachmakers join? In some cases it may have been their age disqualifying them from UKSC membership; in others it was probably the cheapness of the subscription - many did not want to pay the UKSC superannuation benefit if perhaps the railway company paid a pension; similarly, others, recognising that railway shop workers rarely, if ever, went on strike, were reluctant to pay toward other members' strike benefit; and again, the supposed regularity of employment meant they felt less need for the UKSC's unemployment benefit scheme.

Before the NUR was formed, some local UKSC branches were having to come to terms with the presence of another union representing coachmakers. At York, the local UKSC branch felt the need in March 1912 to form a joint deputation of trimmers with GRWU trimmers over an outstanding pay award.¹¹⁷ Though, later that year, the UKSC general secretary wrote to the Brighton branch secretary, regarding a proposed joint deputation of skilled unions with the GRWU, objecting strongly to that union "voicing the claims of skilled workers".¹¹⁸

The GRWU appeared little threat to the UKSC outside of York, but once the NUR was formed, its whirlwind recruitment in the railway company workshops had profound implications for the UKSC/NUVB. The NUR recruited not only craftsmen who refused to join the UKSC, but also effectively undermined in the railway workshops the later moves of the NUVB,

horizontally into cognate trades and occupations, and vertically downward into the semi- and un-skilled. The NUR's recruitment of the relatively small number of women in the carriage shops¹¹⁹ was, as with T&GWU recruitment of female trim shop workers in the motor industry many years later, a sideshow to the main issue facing the UKSC/NUVB.

Branch membership figures show that in most railway branches, UKSC membership seemed neither to fall as a result of defections to the GRWU/NUR, nor rise due to the increased interest in trade unionism the presence of the NUR instilled. There were some rises, such as Wolverton in 1913, Swindon in 1915, and Springburn in 1915 and 1916, which might be explained by the latter factor. But rises and falls of membership were probably more generally related to the recruitment or laying off of craftsmen. There was, however, a general growth of UKSC/NUVB membership in the railway branches from 1917-18 until 1920-21, including both York and the previously minute Ashford branch which had been disbanded during the war. The growth at the end of the war occurred possibly partly as a result of increased carriage building activity, though the general upsurge in trade union membership in 1919-20, which affected most NUVB branches, must also have spilt over into the railway workshops. (See Appendix 2 for membership figures of selected GRWU/NUR and UKSC/NUVB workshop branches.)

The GRWU/NUR were not the only non-craft union to recruit in the railway company workshops. The Workers' Union also did, with a fairly stable core of membership in a number of branches, notably Derby and, in particular, Swindon.¹²⁰ But it is very likely that the Workers' Union membership was

concentrated on the engineering side of the workshops. The real challenge to the UKSC/NUVB came from the GRWU/NUR.

By the beginning of the 1920s, the NUR's growth in the workshops had left the NUVB with only limited scope for future recruitment. And with the rationalisation brought about by the 1921 Act (see chapter 5), workshop employment was destined to decline. The future of vehicle building, and its related employment opportunities, had already shifted to motor transport. How clear this was to the collective leadership of the union in the 1920s is difficult to assess.

However, whereas the railway workshops experienced a surge of UKSC/NUVB membership growth in the first world war and immediately after it, the infant motor industry had already, in the decade before 1914, given the UKSC a highly strategic position in its production process. While the railways had revolutionised transport in the nineteenth century, motor vehicles did the same for the twentieth. The impact of the early motor industry on coachmaking employment and trade unionism is the subject of the next chapter.

CHAPTER 4 - THE EARLY MOTOR CAR INDUSTRY

A. THE HORSELESS CARRIAGE

The speed of the change-over from horse-drawn to motorised passenger transport at the beginning of the twentieth century was phenomenal. Figures for London in the decade before the first world war give some idea. In 1904, 585 new horse-drawn cabs, but only 1 motor cab, were licensed. Only six years later, in 1910, the figures were a total of 8 new horse-drawn cabs, and 2,481 new motor cabs. Between 1903 and 1908 alone, about 2,700 2-wheel cabs were taken out of use. Similarly, while in 1905 78 new horse-drawn omnibuses were licensed, compared to 20 motor omnibuses, only 2 years later, in 1907, the last 2 new horse-drawn buses were licensed. By 1910, there were 1,200 licensed motor omnibuses on the streets of London.'

An annual traffic census of Fleet Street by "Motor Traction" revealed that in 1907, 3,236 omnibuses used it, of which 995 were motor propelled. By 1912, of the 2,770 omnibuses, none were horse-drawn. The horse-drawn cab trade lingered on a little longer. In 1908 the same census revealed 48 motor cabs, and 1,902 horse-drawn; while in 1914, there were 1,652 motor cabs, compared to only 74 of the horse variety.

At this stage, however, the revolution in the means of propulsion had only affected the passenger-carrying side of transport. A Board of Trade traffic census for London revealed very little inroads into commercial traffic, as shown in table 4:1 overleaf.

Table 4:1 Proportion of horse-drawn traffic, London 1911-13.

	<u>1911</u>	<u>1913</u>
Horse-drawn as % of total passenger vehicles	13%	6%
Horse-drawn as % of total trade vehicles	94%	88%

At the time most horse-drawn commercial vehicles were more economical than their motorised counterparts. Often they operated within a short distance of their base, covering a small mileage and standing stationary much of the time while delivering. Consequently the horse vehicle represented smaller capital lying idle.²

Early Motor Car Bodies

The earliest motor cars were in effect coaches "equipped with a stationary motor and a speed-changing mechanism of the simplest type". These were the real "horseless carriages", as they had all the features of the coach, minus the horse. Only when the motor was placed in front of the body, was the car for the first time structurally different from the coach.³ The major innovations in motor car design were almost all concerned with engineering. For many years there was a reliance on more traditional methods of coachbuilding as far as the bodywork of the new motor cars was concerned. Thus, as with early railway carriages, a number of horse-drawn carriage features were initially incorporated that were not functional for motor cars; for example, the rear wheels were larger in diameter than the front ones.⁴ Carriage nomenclature was also taken over wholesale;⁵ however, some early changes were made, such as transforming the traditional carriage "steps" into "running boards".⁶

It seemed that the first motor car producers also relied entirely on outside coachbuilders to meet their body requirements. As early as 1888, Hollick, a Coventry coachbuilder, produced the body for the electrically-driven tricar of J.K.Starley. The same firm made the earliest bodies for the Daimler, and then later also for Swift, Singer, Humber, and others.⁷ Mulliners of Northampton had built over 150 car bodies by the beginning of 1899, mainly for Daimler.⁸ By that year, many other coachbuilders had entered the industry, including Salmons of Newport Pagnell, Atkinson & Phillipson of Newcastle, and the London firms of Thrupp & Maberley, Laurie & Marner, and H.J.Mulliner.⁹ By 1902, even a small coachbuilder like John Joice of Basingstoke and Staines was advertising car bodies "in the wood, or finished complete ready for mounting".¹⁰

Although Oliver argues that the general attitude of coachbuilders to taking up car bodies was cautious, by only 1904 H.J.Mulliner of London was claiming to be the first carriage builder in Great Britain to have entirely abandoned the manufacture of horse-drawn vehicles.¹¹ The entry of coachbuilders into motor body production was not, however, without its difficulties. In 1901 De Dion cut off its supply of chassis to customers because so many complained about the poor quality of bodies. The firm arranged to either supply cars complete, or to send out chassis only to coachbuilders acknowledged to be good.¹²

One major problem was that it took a number of years before most car manufacturers realised that chassis and body design and building were not unrelated activities, and needed to be considered together. Lanchester was perhaps the first firm to tackle this. The earliest Lanchester motor cars

had bodies supplied by outside firms but, according to F.W.Lanchester: "The difficulty of getting bodywork made on an interchangeable basis was due to the fact that the body builders would not work to instructions. In those days when a body builder was asked to work to drawings, gauges, or templates he gave a sullen look such as one might expect from a Royal Academician if asked to colour an engineering drawing ... When the bodywork came it would not fit the chassis, and we had to cut the chassis about and adapt the bodywork in each individual case."

The result was that each body would fit only one chassis, and if the chassis needed further attention after its test run, the body could not be switched to another already tested chassis. On top of this, deliveries from the coachbuilder were often erratic. At one stage, nearly £10,000 worth of Lanchester stock was tied up in this way. Despite the reluctance of the company's directors, F.W.Lanchester was allowed to establish his own body-building department in about 1901.¹³

There were also criticisms about the excessive weight of car bodies. One engineer estimated that about 30 per cent of the weight of most car bodies were unnecessary. He had had bodies built by five different coachbuilders, including the prestigious Hoopers, and not one of them had any means of weighing their work on the premises. Rolls-Royce, to save a few ounces in the weight of the chassis, were using pressed steel footstep irons, instead of solid irons. Other chassis manufacturers similarly went to great expense to save weight, but it seemed pointless while the body weight was left to coachbuilders "whose soul can never rise above chunks of wrought iron".¹⁴

On their side, coachbuilders complained that it was ridiculous for car manufacturers to build chassis in such a way that "it is impossible to put any proper doors and other fittings without making parts of the body of solid wood and iron, and of unnecessary size." However, the apparent "silence" of most cars was due to the substantial nature of the upholstery and the solidity of the bodywork. When Lanchester cut the weight of his own early bodies to the limit, this caused unpleasant reverberation or "drumming", and within eight years the body weight was much greater.¹⁵

The obvious need for closer coordination between coachbuilding and chassis manufacture led one contemporary observer to note: "Motor car firms were driven to take up the coachbuilding part of the trade by the impossibility of getting the coachbuilders to supply what they desired, or to realise that a new era in vehicle construction had dawned."¹⁶ However, the interchangeability that Lanchester achieved was far from the norm due to the proliferation of body styles offered by most car manufacturers. Thus, one of the largest, Austin, was, in 1911, still adopting the following procedure: each chassis was road-tested; a body was then fitted to it, before being removed again, to allow the chassis to be painted, and the body painted, trimmed and varnished before the mounting operation took place.¹⁷ And the largest producer, Wolseley, also adjusted each body to its own chassis before separate painting operations took place.¹⁸

Car manufacturers' attitudes towards building their own bodies varied. Daimler already had in 1897 its own shops for body-building, painting and finishing, although it had only produced 20 cars by the middle of that year. But the majority of bodies were built outside until a fire in April

1903 necessitated the erection of a new paint and finishing shop. From that time Daimler built and finished the majority of bodies on its cars.¹⁹

Another Coventry company, Deasy, started producing cars in 1906, including bodywork. But by 1910, under the new management of John Siddeley, it had given up making bodies, Siddeley deciding that "this is a branch of the trade that is better left to specialists". It involved the company in a great deal of extra shop space as well as locking up a lot of extra capital. In fact, this company only managed to expand its output by also buying in engines from 1910, as there was a desperate shortage of accommodation.²⁰

The Rover Company first started producing cars in 1904, and its bodies were supplied from the local Coventry coachbuilding firm of Hawkins & Peake. Rover very quickly accounted for most of that firm's output, and in 1907 took them over. Looking for ways to cut costs, the Rover Company soon decided to buy out components that could be made more cheaply than in the firm (for example, in 1910 they marketed a car with a Daimler engine). However they confirmed in 1909 that bought out bodies were more expensive. Because of the growing demands on factory floor space that all motor companies faced, by 1912 Rover car body production was taking place on two separate sites. At Parkside, in the body erecting department "every available foot of space is occupied". After the bodies were built, they were primed and filled, and then trimmed, before going to the Victoria Road works, where they were painted and varnished, and where most of the iron fittings used on the body were produced. It was noted at the time that the company were "in the enviable position of having to refuse orders".²¹

Vauxhall produced its first car in 1903; with its move to Luton in 1905 it built its own coachbuilding factory.²² The Star Company of Wolverhampton boasted in 1899 that its cars were "all of our own manufacture, except for chains and tyres"; and by 1904 had a large staff of coachbuilders employed.²³ Wolseley bodies were also, by 1904, being produced by the firm's own "experienced carriage makers".²⁴

In general, it seemed to be commercially necessary for most car manufacturers at "the lower-priced end of the trade" to produce their own bodies fairly soon after they engaged in serious production.²⁵ But while most car manufacturers had set up their own body-building shops before the first world war, the situation anticipated by one contemporary did not occur for many decades. He argued in 1911 that in a few years, "with the exception of the orders placed with one or two celebrated coachbuilders by clients to whom money is no object, there will be no bodies built outside the works of the car builders or repairers".²⁶

Car Production

Some 34,000 cars are estimated to have been built in Britain in 1913, with eleven firms each producing 1,000 or more - Rover, Singer, Humber, and Daimler in Coventry; Austin and Wolseley in Birmingham; Star and Sunbeam in Wolverhampton; Ford and Belsize in Manchester; and Arrol-Johnston in Scotland.²⁷ Annual production levels for three firms are given in table 4:2 below, and further demonstrate that in the pre-1914 era, the level of production of individual firms, apart from Ford, was generally extremely low compared to the growth that took place in the interwar period.

Table 4:2 Annual production levels for 3 motor car firms up to 1914²³

	<u>Vauxhall</u>	<u>Rover</u>	<u>Austin</u>
1903	43	-	-
1904	76	-	-
1905	n.a.	-	-
1906	20	754	31
1907	69	1,211	180
1908	94	869	216
1909	197	663	198
1910	246	705	579
1911	269	n.a.	781
1912	306	791	1,107
1913	411	1,563	882
1914	529	1,943	545

The low levels of production, exacerbated by the variation in body styles, meant that skilled coachbuilding labour was a necessary component of the early motor car industry. However, with the accompanying decline of horse-drawn passenger transport, there were important changes in the demand for particular skills, a question which will be addressed in the next section.

B. NEW SKILLS AND OLD

As early as 1906, ten years after Daimler had started producing motor vehicles in Britain, UKSC General President Kinggate declared that "we have to recognise that the horse drawn vehicle seems likely to become extinct, especially with regard to public conveyances". This was particularly noticeable in London, with a large number of motor omnibuses on the streets within a very short space of time. But horse-drawn passenger conveyances were also threatened by the electric tramcar; this latter vehicle was mainly responsible for a decline in the number of horse-drawn cabs plying for hire in Liverpool from 860 to 540 in the ten years from 1892.

This dual challenge, from motor vehicles and electric tramcars, to the centuries-old domination of the horse as the means of traction for road transport led Kinggate to declare, "Our members must be alive to this development, and adapt themselves as readily as possible to the changing conditions of our trade". But while the "general improvement in trade" caused by the transition from horse drawn to motor vehicles caused "an exceptional demand for bodymakers", it had more serious consequences for the employment prospects of some of the other branches of the coachmaking trade.²⁹

The early motor car industry further accelerated the changing range of coachbuilding skills that had already been affected by the rise of railway carriage building, and, to some extent, by the emergence of

electric tramcars. The woodworking skills of carriagemaking and wheeling went further into decline, while "coach finishing" became further entrenched as an important section of the trade.

Coach Finishing

Railway carriage building had brought with it the new trade of "coach finishers" who did all the coach joinery and interior fittings. According to one union official, it was equivalent to house or ship joinery, and also compared to cabinet making.³⁰ In private carriage building there was a separate trade of coach joinery in the larger establishments. These men made the glass frames, blinds, seat boxes, trunks, and other internal work. Their numbers were never very large, and while Adams claimed that the required skill was "not very considerable", another source suggested they were "so nearly allied to the bodymakers as hardly to form a different branch".³¹ It is not clear at what point coach finishing became a separate trade from railway carriage bodymaking or when the term "coach finishers" began to be used, but they were noted in the Birmingham railway contract shops by at least 1880, "if not earlier."³²

The UKSC did not cater for the separate trade of coach joinery or finishing, and it appears that as this expanded in railway work the men performing it were not bodymakers, but joiners and cabinet makers. However, their growing numbers made them an increasingly important section of the trade, a 76% return of railway carriage and wagon builders in 1906 finding some 1,431 coach finishers employed, compared

to 2,998 coachmakers (ie bodymakers) and 784 trimmers.³³ While in 1892 the Swindon branch carried a resolution that it was "detrimental to the interests of our Society to admit Finishers as members",³⁴ in 1895 "duly qualified" coach finishers were allowed admission to the Society. By then, they were also becoming important in the new electric tramcar industry.

However, the UKSC were faced with competition from rival unions. The two Cabinet Makers' societies claimed they had accepted coach finishers into membership before the UKSC did, and as a result had members employed in all the railway carriage shops and the tramcar building works. A number of joiners were also employed on the same work. Following a dispute in 1906 over who should do the finishing work on trams for Manchester Corporation, the UKSC EC contacted their branch secretaries to discover the numbers of cabinet makers and joiners employed on coach finishing work. "We were not prepared to find the large proportion that are employed on this work" they reported.³⁵

An earlier dispute with a Cabinet Makers' society at the tramcar building works at Hadley was resolved by the TUC arbitrating, as a result of which a large number of coach finishers joined the UKSC.³⁶ A later dispute at Hurst Nelson saw the Amalgamated Furnishing Trades Association claiming that the UKSC had caused the discharge of two of their coach finisher members, and this time the GFTU conciliated.³⁷

The claim of the UKSC to this work was made more urgent with the growth of the infant motor industry, as it was noted in 1906 that "the

coach joiner has revived, and found more work in the motor car than he ever had in the old days of travelling carriages".³⁹ Coach finishers' work on motor cars was to do the glazing, padding the windows in putty, to fit floorboards, fit and fix wooden fillets, fit window lifts, and fit instruments into the wooden instrument panel. By the early 1920s they were also often performing what traditionally might have been coach fitters' work - fitting locks and door handles, and so on. In Coventry in late 1919 there were already 162 finishers in the branch, compared to 593 bodymakers and 220 trimmers.³⁹

Carriagemaking and wheeling

The carriagemaker's skills, which were not needed in the railway and electric tramcar industries, were dealt their death-blow by the rise of the motor vehicle. Any work on the very different chassis of motor vehicles was effectively denied as, in Britain, steel chassis frames were rapidly introduced. When the first Deasy car was produced in 1906 its armoured-wood frame was already considered old-fashioned, being superseded by steel within a couple of years; and Sunbeam of Wolverhampton abandoned their armoured-wood frames after 1908.⁴⁰ In this respect, British firms were more advanced than American, as Franklin cars had wooden chassis as standard until 1927.⁴¹

Similarly, with wheels, British firms moved away from wooden wheels much faster than their American and European counterparts. One estimate, published in 1915, gives the relative shares of the different types of wheel used in four countries:⁴²

Table 4:3 Types of motor vehicle wheel used, 1915.

	<u>Wood</u>	<u>Wire</u>	<u>Steel</u>
Britain	44.7%	36.9%	18.4%
Germany	76.2%	8.9%	15.2%
France	78.2%	16.7%	5.1%
U.S.A.	98.2%	1.8%	-

Generally speaking, woodworking machinery would probably have been used for producing any wooden components for chassis frames and wheels, limiting the opportunities for skilled carriagemakers and coach wheelers. Wooden wheels, though, were still generally used for heavy commercial motor vehicles, but this work, along with the continuing demand for horse-drawn commercial vehicles, was generally the province of the wheelwright and not the coachmaker.

One destination for carriagemakers was to become motor body "mounters", this being the nearest equivalent to their former work. The mounter had to accurately mount the body on the chassis, and sometimes fit the scuttles, as well as ensuring the doors did not jam after mounting had taken place. This movement of skilled labour was probably a major factor in the NUVB's later claim that the motor industry operation of body mounting required skilled workmen.⁴³

At the same time that carriagemakers and wheelers were being displaced by motor vehicles, bodymaking was becoming more accessible to other trades. The standardisation of some body production allowed the use of woodworking machinery. The latest English and American

woodworking machinery was reported at Austin in 1910. At Daimler in 1912 it was claimed that no handwork was involved, and at Rover in the same year, while the machining of wooden components was "not carried on to the same extent" as at Daimler, "the amount left to do by hand is comparatively trifling". At Wolseley in 1914 there were twelve standard types of body, as well as special coachwork ordered by customers. For the standard work, wooden components were prepared in the sawmill, and sets issued to bodymakers when required.⁴⁴ Even in London, the heart of the traditional coachbuilding industry, the methods of production were also being changed, the unions claiming that the "increasing use of machinery is eliminating much of the skill which was formerly required of us in the production of our work".⁴⁵

The extent to which machinery was operated by specialist machinists or by bodymakers seemed to vary from shop to shop during this period. Problems arose at Rover in Coventry early in the first world war when the Woodcutting Machinists' union complained of the extensive use of machines made by bodymakers. The latter used all the machines except spindles and cross-cutting, while the former objected to them using any but the band-saw.⁴⁶ The use of machinery was a mixed blessing. While "the new planing machines didn't tear the guts out of a man like the jackplane", they made "fingers fill the air like snowflakes". When the UKSC took one Coventry employer to court claiming compensation for a member who had lost three fingers in a planing machine, the employer's key evidence was "It is ridiculous for this man to say he can't work because he has fingers missing; I have twenty men in my shop, and every one of them has fingers missing, but they still work".⁴⁷

Because of "the extensive use of woodworking machinery in the production of railway, tram and motor vehicles", one prominent UKSC member could argue in 1905 that trades such as "wheelers, wheelwrights, waggon makers etc, having a certain amount of knowledge of the construction of vehicles, can, and do readily adapt themselves to this class of work". But there was more at stake than just the fact that private coachmaking was "fast departing", with the consequent need to find work for those whose traditional skills were now increasingly redundant. Much work was "being filched from us by all classes of woodworkers, such as Joiners, Cabinet Makers, and others, for which we are to a large extent to blame on account of that paltry pride that has influenced us in thinking the work beneath us".⁴³

The same problems faced the NUVB nearly twenty years later, when the executive attempted to force unemployed woodworking members into the car industry. "In many of the shops now requiring men, the work is on the mass production system, sectionalised and built up from jigs and templets. Bodymakers, finishers, carriagemakers or wheelers, being skilled in the use of woodworking tools, can rapidly qualify and we urge all unemployed men to make an effort in this direction Carpenters and joiners do not hesitate to get into this work at the first available opening, and such should be an incentive to make an effort in their own interest to hold the shops for our members. Branch officers are urged to press this upon any members out of employment, even to the extent of stopping benefit where they are satisfied members are qualified to give such openings a trial".⁴³

Bodymaking

One problem facing the UKSC before the first world war was that there were periodic shortages of skilled bodymakers for the expanding motor car body demand. This meant that they were sometimes unable to supply labour to employers requesting it, as happened in 1912, for example.⁵⁰ To avoid more joiners coming into the trade, one solution was to "show a preference to a kindred trade", and that meant mainly wheelwrights. But this also sometimes ran up against the same difficulty, and UKSC General Secretary complained bitterly in 1914, "if I could only find 20 wheelwrights now that could do bodywork I could put them into jobs to keep joiners out. I have been scouring the country for bodymakers and cannot get them, till at last we have told a big firm - employ joiners because we cannot find men for them".⁵¹

The UKSC, however, were not prepared to pay any price to get their members building motor car bodies. In 1905 the coachbuilders Lawton of Liverpool desperately needed bodymakers on motor car work, and circularised most UKSC branch secretaries, enquiring for men. According to Kinggate, "some of the members applying for jobs had never been used to this class of work, or to the private trade at all", but owing to "the difficulty of getting qualified men" the firm had started them and operated a policy of paying the men what they were worth. But the local Liverpool branch stopped this, insisting on the Liverpool minimum rate for bodymakers. The employer appealed to the union's executive, and an agreement was reached between the three parties that the men were paid

their worth for one month; after this, they would either be dismissed, or retained on at least the minimum rate.

Kinggate argued that "in the present transition in the form and character of vehicles, there were many men who were excellent workmen at the branch of our industry they had been used to, who would experience considerable difficulty in adapting themselves to this new development, but if he was anything of a workman and able to use his tools he would soon acquire proficiency". He justified the agreement with Lawton by contending "we have a duty to keep as far as possible the building of cars in the hands of coachbuilders. There will be less likelihood of other trades encroaching upon our work, as we are experiencing with the engineering and other companies who are taking up motor car building".⁵²

A few years later, the union showed their flexibility when Sunbeam of Wolverhampton had difficulty in obtaining bodymakers and employed "several nondescripts". "It was deemed advisable to fix a minimum rate that would have the effect of stopping the employment of these men".⁵³ The employment of joiners on motor car body work, however, was a very real problem, and is addressed in more detail in section C. At the same time, the UKSC had to fight against joiners taking coachmaking work on the new electric tramcars.

As Corporations, around the turn of the century, largely took in hand the repair, and sometimes the building, of their own electric tramcars, the UKSC Journal requested members to "endeavour to keep out of the coachmaking department, men who are not entitled nor eligible to work at

our trade".⁵⁴ Union officers raised the issue with a number of Corporations but found "an inclination on the part of such bodies to employ joiners and house-painters to do the repairs to the cars" - for example, at Bradford, though joiners were successfully removed at Cork.⁵⁵

EC delegates were then sent specifically to Oldham, Hull, Newcastle, Bradford, and Sunderland, in 1902, asking them to employ only coachmakers. At Newcastle, their efforts were successful, and within a very short period, only coachmakers were employed, all becoming UKSC members - 34 bodymakers and finishers, plus some coach painters and coach smiths.⁵⁶ However, Hull & Sunderland continued to cause problems, and "interlopers" were also reported at Nottingham in 1904.⁵⁷ "The difficulty has mainly arisen where Corporations or Town Councils have initiated or taken over the tram service. These bodies generally employ a staff of joiners and painters, and when any repairs to their cars have been needed they have employed them to do it."⁵⁸ In Bradford, joiners claimed that tramcar building was a new industry, winning Trades Council support for their position, which the Corporation then accepted.⁵⁹

In 1905 the UKSC claimed that determined attempts were being made by cabinet makers and joiners to obtain work in those corporations that already employed only coachmakers,⁶⁰ but by then the storm had probably been weathered. Employment statistics from most local authorities in 1906 show that the direct labour employed by them on tramway and omnibus services included 630 painters (whether house or coach not specified), 447 bodybuilders, and 243 carpenters and joiners.⁶¹

Many Corporation Tramways Departments were to become significant employers of vehicle building labour. Already in 1904, over 100 coachmakers were employed on Liverpool tramcars, other trades being excluded.⁵² In the Belfast tram depot, 40 members were reported in 1906, and 45 in 1911, while in the latter year there were 35 members and 7 non-members at the Inchicore works of the Dublin Tramway Company.⁵³ Just before the first world war, nearly 200 were employed by Manchester Corporation Tramways, while Glasgow Corporation Tramways employed no less than 40 painters, of whom 34 were UKSC members and 6 non-unionists.⁵⁴

Motor car panel work

One major change in motor car bodymaking before the first world war was the adoption of metal panels in place of the traditional wooden, usually mahogany, ones. An American source listed three particular advantages of metal-panelled bodies over all-wooden ones. Firstly, the high-grade timber needed for body panels was becoming scarce. Secondly, there was a tendency for such wooden panels to check or split on account of extremes of heat and cold - "many a manufacturer has spent several days in finishing and varnishing wooden bodies in rooms of high temperature, only to see panels split or check upon being exposed to the cold when loading on freight cars for shipment". And, finally, metal-panelled bodies required less than one thirds of the paint of a wooden body to obtain the same finish, fewer coats being used as "filler" was not necessary.⁵⁵

In Britain, also, there was a move away from all-wooden car bodies, but like many other early changes, it was uneven between different factories. In 1903 Belsize of Manchester were using panels of compressed Russian block, made in thin layers, which was very pliable and easier to repair than aluminium.⁶⁶ Daimler were still using mahogany for body panels in 1906, but within four years they had changed over to tinned steel.⁶⁷ It was not to everyone's liking. A Mr. Hobley, head of Coventry Motor Bodies, as late as 1912 did not believe in metal-panelled bodies: "A properly built wood body is a coachmaker's job, and cannot be made by a combination of glorified joiners and tinkers".⁶⁸ However, one source suggests that by 1912, wooden panels were effectively "obsolescent", aluminium being used for the highest grade work.⁶⁹

One factor in the change-over in Britain seemed to be fashion. By 1905, reverse curves were much in evidence, as on, for example, Arrol-Johnston cars, but could not be made in wood. It was also reckoned that sheet metal was lighter and cheaper than wood, and took on a higher finish when painted.⁷⁰ The disadvantage was that the slightest dent was very expensive to repair compared to wooden panels.⁷¹ However, many coachbuilders transferred fairly quickly. Harrison & Son of Euston Road, London, was using aluminium panels in 1903, while Cockshoot of Manchester was manufacturing its own panels by 1907. However, in 1912, Hollick & Pratt of Coventry were reputedly one of only a few bodybuilding firms actually making their own panels.⁷²

Metal panels generally required the employment of panel beaters, as were reported at Daimler in 1912.⁷³ But it was a difficult trade to

master. In one panel beating shop the men had great trouble obtaining the right shape and the necessary smoothness; dozens of capable tinsmiths and coppersmiths passed through the shop, staying only a day or two before giving up.⁷⁴ One problem facing employers was that in those shops where unionised tinsmiths were in the majority, only men who had served a general tinsmithing apprenticeship were allowed in the shop; and "improvers" had to be paid the full rate, even though they still had to learn coach tinsmithing at the employers' expense.⁷⁵ One way around this problem was through using steel pressings, but these were fairly rare at this stage in Britain, though they were used at Ford's Manchester plant, it being specifically noted there that "the panel beater has been entirely eliminated".⁷⁶

Bodymakers had lost the work of making the panels, but because panel-beating was a new branch of sheet metal work, without any established trade practices, the bodymaker retained the job of fixing the panels on to the wooden body frame. With the early demise of wooden panels on motor car bodies, NUVB officials later estimated that by about 1908 or 1909, many of their members were only working with metal panels, and this undermined the employers' later argument that bodymakers were solely woodworkers.⁷⁷

Smiths and fitters/vicemen

Coach smiths were initially less affected by the introduction of the motor car body than some other coachmaking trades. A variety of wrought iron fitting were still needed in the production of car bodies, a

visitor to the works of Regent Carriage Company in 1912 declaring "the amount of smith's work required in the body work of an automobile may have surprised some".⁷⁹ Coachsmiths' shops were noted, for example, at Daimler, Austin, Rover, and Wolseley, and would have existed in all coachbuilders and car firms' bodybuilding departments.⁷⁹

Coach fitters (or vicemen) were, however, up against the much larger presence of engineering fitters in car factories, which was avoided in pure coachbuilding premises. But, even in car factories, they did not disappear overnight.⁸⁰ In late 1919 66 smiths and fitters were still on the books of the Coventry NUVB branch.⁸¹ The major problem facing both these trades was the changes in material and technique. Before the first world war the coachsmiths' work was no longer exclusively forging, but included oxy-acetylene welding, which was considered in 1910 to be "an absolute necessity to the metal world", its use being reported, for example, at Daimler that year.⁸² Pressed steel was also being used for a number of previously wrought iron fittings.⁸³

The demarcation line between engineering and coach fitters was the subject of arbitration at the Manchester Corporation Tramways as early as 1903. The ASE claimed that "coach fitters could not work machines, and that they were not fitters at all, but called vicemen". However, the arbitrator ruled that "the mere fact that the material is metal and has a mechanical action does not necessarily make it engineering work; a simple instance of this can be seen in the hinges of a door". The result was a division of the work between the two groups,⁸⁴ but such a solution was less feasible in the rapidly changing world of motor cars.

At the Beardmore car factory in Scotland, vicemen found in 1920 that, as bodies were becoming standardised, many remaining wrought iron fittings were being superseded by malleable castings, and engineering fitters were also encroaching on their work. In response the NUVB claimed for vicemen the "fitting of canopy rods, lamp sockets and brackets, platforms, wings, and all iron work on wheels, and all body fittings". Shortly afterwards they were again in conflict as engineering fitters started putting on aluminium beading on bodies.⁹⁵

Coach smith work did survive in the inter-war period, as the production of individual and small-batch coachwork by specialist coachbuilders required custom-made hand-forged work, as noted, for example, at the London firm of Vanden Plas.⁹⁶ Along with these coach smiths, there would be the accompanying coach fitters. In the car firms themselves, the two trades effectively died out, with coach smiths probably being absorbed in other general smith or welding work, while the remains of the fitter's job was taken over by coach finishers and workers on the engineering side of car production. But commercial vehicle production, with a continuing market for custom-made bodies, could also absorb any smiths or fitters/vicemen whose skills were redundant in the car industry.⁹⁷

Conclusion

The twenty years before the first world war, therefore, accelerated the changes that had been going on in the coachmaking trade since the introduction of railway carriages. They further affected the internal

composition of the coachmaking labour force, finally bringing the trade of "coach finishing" into prominence, while sounding the death-knell for carriagemaking and wheeling. The traditional metal trades of smithing and fitting were on the brink of being excluded from the new car industry, to be ghettoised in the purely bodybuilding shops, but the bodymaker (whose trade had always involved some work with metal) was embracing metal panel fixing as a new feature of his work. The painters and trimmers were not affected by these changes. Their work was confined to the body (though painters also took up chassis painting) and the techniques still remained fundamentally similar to horse-drawn work.

Of course, these developments were uneven across the country. The coachmaker's work covered past as well as present means of transport. Horse-drawn vehicles remained an important feature in commercial transport for decades to come.⁸⁸ The NUVB's amalgamation with the Wheelwrights and Smiths in 1925 further cemented their involvement in this area. In general, however, those whose trades were in terminal decline, could probably still find work in their own trade or move into a related area. But the available statistics make it clear that the UKSC was still very much a multi-craft society in the years just before the first world war.⁸⁹

C. UNION ACTIVITY IN THE EARLY CAR INDUSTRY

The motor industry sprang up often in areas where there had been little tradition of coachmaking employment. Coventry was one such place. The other main centres were Birmingham with Wolseley, Austin, and Lanchester; Wolverhampton with Sunbeam and Star; Scotland with Argyll and Arrol Johnston; and Manchester with Belsize and Ford. In all of these areas the UKSC, and the LPCTU to a much lesser extent, had a certain degree of union penetration, sometimes very high. Table 4:4 overleaf shows UKSC membership growth in certain branches. Alexandria branch seems to have been exclusively based around the Argyll factory, while Coventry and Wolverhampton probably both had about 90% or more of their members working in car or motor body building factories by 1914.

It is more difficult to disentangle car industry membership in the Birmingham area. At least 80 members were noted at Wolseley in 1907-08, being allowed to join either the Birmingham or Saltley branch (the latter having been set up in 1906, and including all the "Metropolitan" members); while Austin members were in the Birmingham branch. The LPCTU also claimed 80 members in Birmingham at the end of 1913, having established town secretaries there and in Wolverhampton in 1911.²⁰ While the expansion of UKSC membership in 1913 may have been partly due to the wave of strikes in the Birmingham railway contract shops, much of the pre-war growth must have been associated with the car industry.²¹

Table 4:4 UKSC membership in certain car industry areas, 1900-1914.

	<u>Coventry</u>	<u>Wolverhampton</u>	<u>Alexandria</u>	<u>Birmingham & Saltley</u>
1900	57	24	-	254
1901	80	24	-	234
1902	115	26	-	255
1903	176	28	-	286
1904	188	37	-	321
1905	202	47	-	357
1906	269	63	-	475
1907	436	98	141	552
1908	324	96	63	470
1909	361	85	57	388
1910	381	100	115	379
1911	400	129	160	432
1912*	544	269	206	635
1913	838	347	248	863
1914	878	354	110	925

* October membership for Coventry, Alexandria and Birmingham. All other figures are end-year.

Coventry

Well before the first world war, a large number of firms that survived until at least 1930 had become established in the Coventry car industry, being (roughly in chronological order of their first car) Daimler, Riley, Humber, Swift, Standard, Lea & Francis, Rover, Singer, Siddeley-Deasy, and Hillman. A number of firms established just before the war survived well into the 1920s - Coventry Premier, Buckingham, Stoneleigh, Calcott, and Crouch. As well as these there were perhaps

another thirty firms producing cars in Coventry at some stage before the first world war.²²

The UKSC, and the LPCTU (especially after 1907-08), would have had members working at most of these firms. Some firms did not produce their own bodies, but there were a number of local coachbuilders, the most prominent of which were Charlesworth, Pass, and Hollick & Pratt. There were members also in at least three other small local coachbuilders, among them being Hewers. There were probably UKSC painters and liners at most of the cycle firms, as members were reported variously at Singer, the Premier Cycle Company, Rudge-Whitworth, and Calcott; and there were members at Triumph, building motor-cycle side-cars as well as cycle painting, the Bramble Side Car Company, and a small number at the Coventry Ordnance works, and Dunlop.²³

The two major problems facing the Coventry UKSC branch in the 1900s were the loss of membership due to their attitude to the premium bonus system at Daimler, and the difficulty of getting established at Humber. These will be discussed before a look is taken at the consolidation of the union in Coventry in 1913.

Daimler

Early in 1904 the Daimler company proposed a bonus system which was unanimously rejected by a large meeting of the Coventry UKSC branch, on the recommendation of EC members. This meeting agreed that all those affected should hand in their notice, but the company withdrew the

initial scheme and replaced it with a very similar one. While the EC was still opposed, several Daimler members wanted to try it, so the EC instructed branch officers to take a vote of the whole branch, which decided to give the system a three month trial. When the three months had elapsed the majority on the scheme wanted to abolish it, but the company said that men would still be credited with bonus, whether or not they drew it. A number of members did continue to draw bonus, but the EC were cautious - "our desire is to gain members and their confidence, not to lose either". Nevertheless they decided to expel any members still working the system after a one month period, and one bodymaker and three painters were reported excluded at the end of 1904.⁹⁴

By the middle of 1905, the Daimler situation was causing problems. Members claimed that while they had 80 of the 100 men employed in the carriage department some 12 months previously, they now only had some 70 out of an expanded workforce of about 200. They claimed that at least 20 had been expelled (not the 4 the EC had reported), another 20 had left, and at least 20 of the remaining 70 members were threatening to leave if the society did not accept the bonus. As a result of not being allowed to pick up the bonus, smiths were earning less than their strikers, painters less than their labourers, and trimmers less than non-society men. It was clear that in some areas the UKSC had been very hard hit - while they still had 29 bodymakers, and 19 trimmers, only 6 painters were members at the Daimler. An appeal to the UKSC's General Council found favour, and the opposition was dropped.⁹⁵ The UKSC were not the only union to experience problems with the premium bonus. The Sheet Metal Workers refused to work it, but a number of their members and

Coppersmiths later did; the Sheet Metal Workers withdrew their other members in 1907, and the dispute was not finally resolved until ten years later.⁹⁶

Humber

Coventry-based Humber first produced a tricar in 1898, then a motorised quadricycle the following year, and in 1900 began to manufacture the "Humberette". In 1903 Humber opened a new factory at Beeston to build larger models, while light car manufacture continued at Coventry.⁹⁷ Early the next year, Nottingham UKSC members complained to the EC that joiners were making bodies at the Beeston factory. The management then agreed to employ only bodymakers on a new car. Soon afterwards, that June, the UKSC opened a branch at Beeston with an initial membership of 49. They were sufficiently organised to resist a price reduction in July, and again a few months later. However, early in 1905, the company started employing non-society men at lower rates.⁹⁸

Meanwhile, the ASE and Steam Engine Makers found themselves in dispute with Humber at Beeston. An interview with the company in February 1905 had been followed by about 30 discharges, all of ASE members. Further discharges of members had occurred, and in May, following another interview, the company decided to form a committee of the men on the engineering side, including union and non-union members, to discuss piecework prices with the manager (though this was claimed by union officials to have been ineffective). However, union men continued to be dismissed and non-unionists started in their place. At the end of

August, almost the entire workforce was suspended, and numbers of unionists were sent notices telling them not to restart, at the same time as the company was advertising for and filling vacancies with non-unionists. When an ASE member applied for a job as an engine fitter, the company replied asking if he was a society or non-society man; if the latter he could start, though "it must be understood that if you start as a Non-Society man that you remain the same". If the former, then there was no vacancy as the company were trying to "balance" the numbers of society and non-society men in the works.⁹⁹

When the company started dismissing unionists again in early December, the membership of both engineering unions gave the necessary one hour's notice and came out on strike. Initially 48 fitters, 38 turners and 1 blacksmith came out, followed by another 4 turners and 2 fitters, making 93 in all; at least 70 of these were union members, with the rest non-unionists. The company fairly quickly filled the strikers' places up with other non-unionists.¹⁰⁰ A local newspaper noted similar complaints in the coachbuilding department, and feared the strike would spread to the UKSC. The two unions in dispute did ask for UKSC support, but the latter's executive suggested that they would only withdraw UKSC members at Beeston, if the other unions would withdraw their members at the Coventry works where the UKSC were having its own severe problems (see below). This proposal came to nothing, and the engineering unions were still picketing the Beeston factory in March 1906.¹⁰¹

Soon afterwards, the UKSC had its own cause for complaint at Beeston, with joiners and non-society improvers being employed on coachmaking.

Pullinger, the manager, refused to remove any of them, though claimed he would employ only coachmakers in future. However, he would make no distinction between society and non-society men, and would not countenance any "intimidation" to force men to join. Rumours circulated that the company wanted a non-society shop, but the works manager, less hostile than Pullinger, approached the UKSC head office to supply him with bodymakers, which Kinggate had "some difficulty" in doing.¹⁰²

Pullinger continued his vendetta against trade unions, and in January 1907 posted a notice in the Beeston works declaring that the company had found out that ASE officials had sanctioned members applying to the firm under false pretences. "This is a mean despicable action", he wrote, asking all workers to report to him anyone they knew to be an ASE or SEM member. "If you do not, this is the thin end of the wedge whereby you will be ousted by trade unions and the lucrative employment you have will be ended. I therefore appeal to you to cooperate with me in doing everything in your power to help us to keep this shop free from all taint of trade unionism".¹⁰³

By this time all employees had to sign the following form: "I hereby declare that I am not connected with any Trades Union in any form whatever, and I agree to remain disconnected with the same whilst in your employ." But it went further than the traditional "document" of the nineteenth century by continuing: "Further I agree to forfeit any wages due to me at such time as it shall be found that I do belong to any Trades Union."¹⁰⁴ Later in the year the Beeston UKSC branch asked the executive's advice concerning a member who had been asked to sign this

paper. And a few weeks later the branch applied for dispute benefit for two members who had been discharged from the Humber because they were UKSC members.¹⁰⁵ Despite these problems, Beeston UKSC branch membership held up, with year end figures being: 1905 - 65; 1906 - 99; 1907 - 76. In 1908 the Beeston factory was closed down and all production concentrated in Coventry.¹⁰⁶

Before the Humber Cycle Company extended their Coventry works to include motor car building in 1903, they had employed a number of joiners. These men were then transferred to building the new motor bodies, and a UKSC delegation in July 1904 found 5 joiners so engaged. There was, however, little woodwork in these Humberettes - a platform and a seat, the other parts being metal. The EC delegates had to be satisfied with a promise that if more men were wanted, then coachmakers would be taken on, and that only coachmakers would be employed when they started building a larger car.¹⁰⁷

Following this, the firm employed 3 coachmakers in January 1905, and when they started to make "superior cars" about 12 UKSC members were engaged. But the foreman was a joiner, and gradually drafted joiners on to this work until there were as many joiners as coachmakers employed on them. Negotiations with the local branches of the carpenters' and joiners' societies were opened, but the matter was continually postponed, with the UKSC members believing "this was being done purposely to give their members an opportunity to get used to the work" as the UKSC members were "acting practically as instructors to them". By October 1905 there were 16 bodymakers and 20 joiners employed. A UKSC

delegation interviewed the firm, who refused to dismiss the joiners but promised to gradually weed them out and replace them with coachmakers. In the light of the earlier broken promises this was unacceptable, and the union withdrew its members - 16 bodymakers, and 4 painters. The firm advertised for non-society bodymakers, but failed to get them, and the vacant places were taken by joiners, who left other jobs in the town.

While the joiners in question were members of the ASCJ and GUCJ, these unions claimed they took no part in obtaining this employment, and refused to call their members out. Within a few months there were some 30-40 joiners employed at Humber, and the joiners' unions argued it was a new industry, where they had as much right as the Coachmakers. The UKSC got the support of both the Coventry Trades Council, and the newly formed Allied Trades Committee in the town, and took the dispute to the TUC Parliamentary Committee, which declared it a demarcation issue to be settled directly between the unions. 102

In 1907 the Coventry UKSC branch contacted the EC about reopening the Humber works to members. While the EC unanimously declared there was no good purpose served by keeping the shop black any longer, a special branch meeting voted 32-124 against opening it, because "If we acknowledge the right of joiners to work at coachmaking in Coventry, it will be detrimental to coachmaking throughout the country." The EC, however, argued that opening the shop would not mean recognising the right of joiners to do coachmakers' work - "our fight against them should be sufficient proof of that". The EC believed the problem had been caused by members of the Coventry branch "working mates with

joiners for six months without raising any objection when we had the promise that joiners should not be employed upon these cars". As Humber was expanding, and taking on more labour, it was becoming a "training ground" for more joiners. At the same time, as the shop was blacked to other branches of the trade, especially painters and trimmers, "all sorts of nondescripts" had been doing coachmakers' work. As a result of requests from other UKSC branch towns, the EC sanctioned all members other than bodymakers accepting work there, and then got the union's General Council to vote on whether or not to open the shop totally.¹⁰⁹

It is not clear what happened, though when the UKSC members from Beeston transferred to the Coventry factory late in 1908 they had to sign notes declaring themselves non-union before they could be accepted for employment.¹¹⁰ They got round this by paying their subscriptions directly to the union's head office, and not through the Coventry branch. When Pullinger, the manager, left early in 1909 to go to Arrol-Johnston, it was felt that the situation would improve.¹¹¹

Consolidation of Coventry UKSC

1913 was an important year for Coventry coachmakers, as not only did UKSC membership expand by about 50%, but an agreement was reached with local employers, and a full-time branch secretary was established. A partial breakdown of union membership for June 1913 reveals 477 UKSC members at named firms, plus an estimated 150 more at others.

Table 4:5 Trade union breakdown of coachbuilding employees at a number of Coventry firms in June 1913.¹¹⁴

	<u>UKSC</u>	<u>LPCTU</u>	<u>WU</u>	<u>Other</u>	<u>Non</u>
Daimler: Body	41	35	2	1	12
Paint*	[48]				
Trim	60				
Finishing	28		13	10	
Smiths & Fitters	20	1	13	1	5
<i>[sub-total</i>	<i>197</i>	<i>36</i>	<i>28</i>	<i>12</i>	<i>17]</i>
Humber: Body	26	9	5		32
Paint	24				
Trim	28		1		26
Smiths & Fitters	9		1		
<i>[sub-total</i>	<i>87</i>	<i>9</i>	<i>7</i>		<i>58]</i>
Rover: Park Side	17	9			61
Paint shop etc	52				24
<i>[sub-total</i>	<i>69</i>	<i>9</i>			<i>85]</i>
Swift	50	9	37		21
Standard	39	7	8		31
Singer	5				12
Charlesworth	32	20			40
Pass	18	3	2		14
Hollick & Pratt	7				30
Bramble	8				20
Triumph	13				
TOTAL	477+[48]	93	82	12	327

* The Daimler paint shop figure was omitted from the June 1913 survey, but at least 48 members worked there in March 1914.¹¹⁵

While the overall total is only a snapshot of the position in mid-year, it is revealing as to the extent of other union involvement and non-unionism at the time. Whether the increase in UKSC membership in the second half of 1913 was at the expense of non-unionism is not known.

The other two unions of significance were the LPCTU and the Workers' Union. The former's Coventry membership, 120 at the end of 1913, was concentrated in the body shops. The Workers' Union had members among the smiths' strikers at Daimler, and were involved in the May 1913 strike at Daimler, Humber, and the Ordnance works.¹¹² The large number of W.U. members at Swift seem to have been based in the paint shop.¹¹³ Generally, though, there was relatively little scope for W.U. penetration in coachbuilding compared to the engineering side, which was more machine-based. It is not possible to know exactly the number of non-unionists, especially in the unnamed firms, but it was significant, except at Daimler. Humber, of course, was still suffering from the legacy of the earlier management's very hostile anti-unionism.

In May 1913 the Coventry UKSC branch committee recommended the branch to ask the employers for an increase in minimum rates, but required at least 400 members to attend a branch meeting, and proposals only to be accepted if voted for by a minimum of 75% of those present. In the event 410 members attended, and were unanimous for an advance, also passing resolutions for the abolition of the piece boss system, and a guaranteed hourly rate paid to all those on piecework.¹¹⁴ A Joint Committee of the UKSC, LPCTU, Woodcutting Machinists, and NAFTA (representing french polishers) was established in June and drew up final proposals.

Negotiations took place in July and August and a settlement was reached in September. The final agreement, which was to last for two years, was a victory for the unions. They got most of the minimum rates they demanded; a claim for 5% on all piecework prices was settled at 2½%; a demand for a halfpenny increase for those already in receipt of the minimum rates was settled at a farthing; and guaranteed hourly piecework rates, along with overtime paid apart from the piecework price were, also won.¹¹⁷

But the unions did not have it all their own way. Edward Buckle, the Coventry branch secretary, who became the Joint Committee secretary in July 1913, was discharged from Daimler at the end of that month (soon after the negotiations started), and was then victimised by other employers. Having been offered the first trimmer's vacancy at Humber, he was passed over, and then told by the foreman that the manager would not allow him to be started. One of the UKSC's shop secretaries at Daimler, who was also discharged at the same time, found it impossible to get a job back at the company, though he subsequently found work elsewhere.¹¹⁸

Following Buckle's victimisation, the branch approached the executive for extra funding to finance a full-time secretary. Funding was not possible within the rules, but a local arrangement was allowed whereby Buckle's victimisation benefit was temporarily made up. In the longer term the secretary's salary was partly recovered by his claiming any necessary deputation expenses from the General Fund. A special branch meeting attended by over 350 members agreed to Buckle starting full-time at the beginning of 1914.¹¹⁹

Birmingham, Wolverhampton, and Scotland

Very little useful information survives of the pre-first world war period in Birmingham, Wolverhampton and Scotland. At Wolseley in 1912 the UKSC EC approved a joint shop committee with the LPCTU, which seemed to function satisfactorily. The LPCTU was active in maintaining the shop earnings limit of time and a quarter, which was breached on a number of occasions, mainly by "a lot of non-union railway hands" (a reference, no doubt to workers from the local contract shops). At one stage a strike was threatened when Wolseley management tried to restart an LPCTU member who had broken the limit, but the man was persuaded to leave by the union. Another threatened strike over piecework reductions was also averted.¹²⁰ There appears to have been a strike at Austin in 1913; but the Lanchester factory had a large number of non-unionists, and the local Allied Trades Committee decided not to strike the firm in 1908 to obtain the minimum rate they had already secured at Austin.¹²¹

In Wolverhampton there was significant union organisation at both Sunbeam and Star. At the former there was a strike of the whole engineering side in 1908 over the amount of overtime working (which at the time went on to 9.30.p.m every night) and the penalties attached to lateness in the morning, which was over before the UKSC members could get their EC's sanction to join it. Later in the year when the motor trade had slumped, UKSC members at Sunbeam, with management agreement, organised short-time working of 32 hours per week rather than have anyone dismissed.¹²² In 1912, union and non-union bodymakers struck at Sunbeam over the company's attempt to increase from 2 to 6 the number of

days' wages kept in hand, compromising at 3. The UKSC EC were against any strike without their sanction but this time they were ignored.¹²³

An agreement was reached by the UKSC, LPCTU and the Woodcutting Machinists with the "Wolverhampton Coachmaking Employers" in February 1914 to pay a schedule of standard rates identical with those agreed in Coventry the previous September.¹²⁴ But when the men at the Star wanted to increase piecework prices, the company insisted they go through the new procedure, agreed in conjunction with the wage settlement. Some two months later the men decided to strike, with or without union support, and were out for four days, gaining some concessions. But the UKSC General Secretary wrote to the LPCTU urging them not to pay dispute pay as no sanction to strike had been given by either of the unions.¹²⁵

In Scotland, well over 100 members were working at Argyll Motors of Alexandria in 1906, and a UKSC branch was set up in May 1907. Membership fell in 1908, due to suspensions and discharges as the company went into temporary liquidation, but picked up again in 1910. The next year there were nearly 200 UKSC members, and 10 from the LPCTU, it being claimed by the latter union that "no man can come into the works without a ticket or join at once". But, in 1914, the company went into liquidation again and the Alexandria works were sold.¹²⁶

Two short strikes took place at Argyll in 1907 over the introduction of a premium bonus system. At least 64 members took part in the first; then when two painters, prominent in complaints that the bonus system was not working according to the agreement, were dismissed, all 39

painters came out for 3 days before they were reinstated.¹²⁷ A further strike in 1912 was not supported by the UKSC EC, who felt the men were not justified in ceasing work without their consent, though the LPCTU paid its members dispute pay.¹²⁸ The UKSC Alexandria branch then had to be restrained by the EC from pursuing an immediate wage claim, the EC insisting they honour the agreement with the company not to raise the matter before the July Fair.¹²⁹

The other main car manufacturer in Scotland was Arrol-Johnston, for whom T.C.Pullinger, fresh from his battles with the unions at Humber, became the General Manager in 1909. The UKSC claimed some 85 members at their works in Paisley early in 1913, being "fully organised". When the firm then decided to move most of their work to Dumfries, they intimated they would not employ union labour there. Later in the year, the Dumfries Trades and Labour Council were active in organising a demonstration against the firm. What transpired is unclear, though membership in the Dumfries branch held up in the next few years.¹³⁰

Manchester

Manchester car factories also had high levels of union membership, Belsize (organised by the Openshaw UKSC branch) claiming 100% membership on the coachmaking side in 1913.¹³¹ Ford built an assembly plant at Trafford Park in Manchester that was ready for operation by October 1911, and acquired an outside body works, referred to as the "Woodworking Company", in July 1913. By December 1912 the UKSC had over 100 members in the factory, including foremen, and were attempting to

get other members in to displace joiners. The union had even done its best to supply men when they were urgently needed by the firm.¹³²

Ford management claimed there were a series of strikes from September 1912, culminating in mid-February 1913 in the sheet metal workers walking out of both the Ford plant and the outside body works.¹³³ But the UKSC did not appear affected, and the managing director of Ford in Britain, Percival Perry, even met UKSC General Secretary in May 1913 at the union's offices about the foreman painter, a Salford branch member, who had attempted to use his position to solicit a secret commission from a paint manufacturer. The man was discharged, and the UKSC's General Secretary and Assistant General Secretary being "quite convinced of the honesty of Mr. Perry in this matter", decided not to pursue a court case against the firm.¹³⁴

A much bigger dispute then broke out in September 1913. The firm started to discharge coachmakers, replacing them with joiners and labourers, who they put "to work mates" with bodymakers; they supplied the labourers with a new kit of tools and expected the bodymakers to instruct them in their use. Whether this policy applied with the other trades is not totally clear, but all the unions met together and, when told that the firm refused to recognise unions and would run the shop in their own way, declared a strike. Kinggate wrote that the trade societies "hope to convince the Ford company that they have come to the wrong place to smash Trade Unionism",¹³⁵ but they failed.

The UKSC continued its strike for 22 weeks, ending it in February 1914. Blacklegging was a major problem, and there were reports that other unions offered to supply labour. Some patternmakers were transferred to making car body jigs, previously done by UKSC members and possibly also by carpenters and joiners. They were instructed by their union to stop, but refused to come out, and it is suggested they left their union.¹³⁶ Some 13 UKSC members also blacklegged and were expelled. It is not known how many members were on strike, but it could have been considerable. Salford branch seemed to have the bulk of the UKSC members at the plant, and its (end-year) membership rose and fell as follows: 1910 - 85; 1911 - 103; 1912 - 224; 1913 - 290; 1914 - 202. The LPCTU, which described Ford as "this well-known firm of American hustlers" had 6 members working there at the time of the strike, all of whom came out. Two other members came from Wolverhampton to start work but stopped almost immediately they realised the strike was still on.¹³⁷

Trade union officials met Ford management at the end of November 1913 and the beginning of January 1914,¹³⁸ but following a Trades Council meeting with Ford management at the beginning of February, the UKSC EC decided to negotiate with the firm on their own, and a few days later closed the strike. Kinggate claimed that the management were willing to recognise the union, but refused to re-employ those members "who held responsible positions" (which included at least one foreman), or withdraw the blacklegs who had replaced them. There was no bar against other members, and the shop was not blacked. It is not known how many members ever got back, though some LPCTU members were working there again in 1915. However, despite Kinggate's gloss on the situation, the

unions collectively had been decisively beaten. Any problem Ford had experienced in the quantity and quality of bodies produced during the strike had been surmounted by importing those necessary from their American factory.¹³⁹ As top U.S. Ford manager, Sorenson, reported in April 1914: "in the past six months there has been no sign of labor trouble. The unionism which has always been cropping up heretofore has been absolutely broken up". This was a major achievement as he boasted that Ford was the only firm in the Trafford Park area "who is not obligated in some manner to labor organisations."¹⁴⁰

Conclusion

The UKSC were flushed out of at least two other factories in the pre-war period. At Vulcan in Southport, an upholsterer was appointed trim shop foreman in 1908 and started to discharge UKSC trimmers, threatening to replace them with upholsterers. The EC agreed to support a strike if the threat was carried out, and, soon afterwards, 41 members were forced to strike. After three months, the shop was opened to members, but none were taken back, and Southport branch membership plummeted from 65 to 19 during 1908-1909.¹⁴¹

An attempt to establish a UKSC branch in Newport Pagnell led the local coachbuilder Salmons to decide to discharge all the unionists in January 1914. After the first two dismissals, including the newly elected shop secretary, 45 UKSC members were withdrawn, with six LPCTU members also coming out. About another 20 members remained at work including many who had mortgages (from a local building society financed

by Salmons) "hanging like a millstone round their necks". In June the UKSC and LPCTU agreed to leave a small picket at the factory while the rest of the strikers tried to get work elsewhere; but the dispute was closed from the end of August, when the firm started discharging men because of the war. The shop, however, unlike Ford and Vulcan, remained unrecognised by the union.¹⁴² The situation in the London coachbuilding shops is covered in the next section.

Despite some very hostile employers, coachmaking union membership and shop organisation received a general boost from the expansion of employment opportunities brought about by the early motor car industry. Most sizeable motor car manufacturers found themselves obliged to negotiate with the UKSC, because of the problem of finding alternative supplies of labour for all the different departments in which UKSC members worked. Only Ford, with a completely new system of manufacture, was able to totally de-unionise its factories.

D. THE DEMISE OF THE PIECEMASTER SYSTEM

As explained in chapter 2, the piecemaster system was particularly widespread in London up to the first world war, and operated in some other parts of the country. When many coachbuilding firms moved into the production of motor car bodies, the system continued in operation. It is the aim of this section to investigate it in the years immediately before the first world war, and then to look at its eventual demise.

London

One of the factors elaborated in chapter 2 was that the piecemaster often employed his own labour. Thus, for example, when in 1911 a UKSC member left Youngs of Bromley, taking nearly all his mates with him, a "London" member took over the shop, the majority of the men working with him being in the LPCTU.¹⁴³ Being employers, piecemasters could dismiss their "mates", as at Barkers where an LPCTU member who had worked with another for 4½ years was given a week's notice because he was too slow on a particular job. This led the body shop workers to send a resolution to the LPCTU executive demanding joint action by them and the UKSC to get rid of the piecemaster system.¹⁴⁴

Who actually employed the men, the piecemaster or the overall employer, became more significant with the introduction of National Insurance contributions in 1912, as coachbuilding was one of the industries covered by the initial scheme. At Gills of Paddington in 1914 an LPCTU member had

been stamping insurance cards and paying the employer's share; he agreed with his union that he should not pay the insurance, but a month later the firm were still insisting that he was liable to pay the contributions, and not them.¹⁴⁵ At Mulliners in Birmingham, when the firm agreed to alter the piecemaster system in 1915, complaints came in a few months later that insurance cards were not being stamped by the company.¹⁴⁶

The piecemaster as sub-contractor paid the men himself; they were not paid direct from the firm's office. Thus they might not get paid at all - as at Maddox in Huntingdon in 1912, where a piece-boss defaulted on paying wages, and the LPCTU took the firm to court to successfully claim wage arrears for two members.¹⁴⁷ The next year the UKSC EC agreed to legal support for a member's claim for wages against a pieceman working at Cunard in London.¹⁴⁸ The UKSC rules from 1907 had specified "all wages and balances to be paid through the office", but the union was usually powerless to enforce it. When an LPCTU member at Lawton's in Cricklewood was not paid by either his piece-boss or the firm, his executive tackled the pieceman who was also in the union. He claimed that the balance on the job had not been paid by the firm, so the executive told him to pay the member working for him, and they would help him to obtain his own account from the firm.¹⁴⁹

The system of not paying the men through the office, but by the piecemen, generally met with favour from the latter. And at Cunard in 1915 the piecemen rejected a proposal to pay wages through the office.¹⁵⁰ This control of wages had its implications. Thus at Mann Egerton in Norwich, mates were found working at the very low rates of 4d, 5d, and 6d per hour.

The company denied putting on cheap men, and an agreement was made on guaranteed rates of 9d for leading men, and 8d for their mates. This agreement was initially ignored, however, by the sub-contractors, as it would have eaten into their profits, and the LPCTU's secretary had to instruct their piecemaster members to pay the agreed rate to their mates.¹⁵¹ Low rates were also found at H.J. Mulliners of Chiswick in 1913, when two LPCTU members were accused of employing cheap labour at 6½d and 7d per hour. Their defence was that these men were not used to motor car work, and had only been taken on because no union members were available.¹⁵²

The issue of sharing the balance at the end of a piecework job was one for which the LPCTU had specific rules, but these had to be policed. In 1914, for example, at Mulliners of Chiswick, a pieceman claimed that the other leading men in the shop had agreed to his retaining 50% and sharing the other half of the balance on a contract which produced over £28 balance as a result of 5 weeks work. The LPCTU executive intervened and got a further distribution.¹⁵³ At Maythorns in Biggleswade, during the next year, LPCTU members objected to sharing out the balances as per rule. Several months later the executive were insisting that members shared balances in relation to wages paid, and endorsed a 10s fine on a member for refusing. But nearly 3 months further on, the member was still not complying, and was threatened with another fine of 10s.¹⁵⁴ How the "balance" was divided seriously affected the state of union organisation in any shop where piecemasters operated. If the balance went overwhelmingly into one man's pocket, that person, although often a trade unionist himself, gained greatly, while his actions affected the pace of work and earnings of others, usually union members themselves.

But the piecemasters did not have it all their own way. At Lawtons in 1911, when the men were unable to make the prices on jobs, the company stated that in future the piecemen would be held responsible for the production of work at the stipulated price. This led to a strike and a revised price list. The LPCTU executive advised members to contact them before entering any bargaining with employers, and that "before accepting any responsibility they should have a written agreement" on prices and conditions.¹⁵⁵ Two years later at the same firm, the management cut job prices dramatically. A meeting of the LPCTU members, and other unionists and non-unionists, took place. A joint committee of the UKSC and LPCTU appealed to the piecemen to resist any reduction. When a deputation failed to shift the company, the men held a meeting and stopped work at once, being out for about a month, before coming to a compromise settlement.¹⁵⁶

A threatened reduction of piecework prices at Barkers, also in 1913, led the LPCTU executive to summon all 8 LPCTU piecemen there and urge them to maintain their prices. Shortly afterwards, when a deputation of men asked the firm for a wage advance, they were told to approach the piecemen.¹⁵⁷ Meanwhile, at the Chelsea Carriage Company in 1915, when the firm tried to get extra work for the same money, a shop meeting of the LPCTU and UKSC members along with a large number of non-unionists, were told that owing to "the signed agreements of the piecemen" very little could be done.¹⁵⁸

The piecemaster system was still deeply entrenched in London in this period. The LPCTU proposal books show at least 4 more piecemasters joining the union between 1908 and 1913, in addition to those union members who became piecemasters.¹⁵⁹ Other coachmaking unions were involved as well; the

Hoods and Bodies factory was under UKSC and WCOU piecemasters in 1914, for example.¹⁵⁰ But there was resistance to the system, and the LPCTU eventually came out forcefully against it. Along with three other unions, excluding the UKSC, the LPCTU was a member of the "London Coachmakers and Wheelwrights' Alliance", whose rules included one that "Members who are, or may become, piecemen, to employ none but Society men, and at not less than the trade union rate of wages".¹⁵¹ However, along with the other Alliance unions, and the UKSC and the London Federal Union (who operated together as the "Operative Coachmakers and Wheelwrights' Federation"), they condemned all forms of piecework at a joint conference in early 1912.¹⁵² In 1914, the LPCTU were even more definite, declaring "every form of piecework is bad, but our worst struggle at present is to get rid of the piecemaster and institute in his place collective piecework with minimum rates of wages, and allow the full balance earned to be divided by every man concerned".¹⁵³

In late 1913, joint meetings of the LPCTU executive and the UKSC London District Committee had discussed the situation in the mounting shop at Barkers where the men did not want piecework, and had resolved that piecework be accepted with a 20% increase, that there be a minimum rate, that every man share proportionately from the balance, and that all money was to be paid direct from the office.¹⁵⁴ What came of this immediately is unknown, but it reflected an obvious groundswell. There was then the incident in July 1914 cited above, where the Barkers' body shop demanded joint action from the UKSC and LPCTU to get rid of piecemasters. Meanwhile at Hoopers, where rates for bodymakers varied from 4d to 10½d per hour, joint union meetings also took place in 1914 to consider action. A meeting of all Hoopers' men was then called to discuss a minimum rate and the

abolition of piecework. When the piecemen's participation in the meeting was queried, one of them said they were prepared to leave, but this was thought to be against "the solid feeling which should prevail". The meeting then carried proposals for new minimum rates, and all money to be paid through the office.¹⁶⁵ Later that year at both Hoopers and Barkers a minimum rate of 10d per hour was conceded, and piecemasters became charge-hands on an hourly rate. This was a major breakthrough, the organiser commenting that in London "the piece-boss system has taken such deep root that it has come to be regarded as impossible to remove it".¹⁶⁶

Daracq had already moved over to individual piecework at the end of 1913, but there was no guaranteed day rate, the manager set the piece-prices, and the 7 former piecemen were given work on daywork to see the cost. Joint meetings of the UKSC, LPCTU, and the WCOU eventually decided to order their members not to make a balance over time and a quarter of their wage rate. The painters then refused piecework in any form, and the body shop came out on strike in February 1914 over a price reduction. In March the LPCTU had to fine members for earning excessive balances; as well as dealing with the more serious charge against a member who had built a cabriolet body at home and had offered to take torpedo bodies home to build. In July the firm tried to introduce piecework across all departments. The body shop, by now on collective piecework, decided to stay on this rather than press for daywork. But the members here approached the firm "to ensure that piecemasters be entirely abolished", suggesting that they were either experiencing or anticipating trouble.¹⁶⁷

The struggle for minimum rates and the abolition of the piecemaster system went hand in hand. UKSC organiser MacKay reported early in 1915 that, following the establishment of a minimum rate at Hoopers and Barkers, the union had then secured it at Alford & Alders, Mulliners, and Million-Guiet. But at the last named firm, the LPCTU soon found that its members were not acting to maintain their new hourly rates.¹⁶⁹ Elsewhere in London, Harrisons tried to reintroduce piecework in August 1915, but the LPCTU executive firmly opposed it. About the same time, another long-established London employer, Peters, decided to abolish piecemasters and pay agreed minimum rates.¹⁶⁹ At Cunard, as detailed above, the firm refused to pay wages through the office after the piecemen had rejected the idea, so the LPCTU retaliated by informing the firm they would not allow their members to work under piecemen as formerly.¹⁷⁰

Finally, an agreement was reached early in 1917 between the National Federation of Vehicle Trades and the "London Joint Committee of Coachmakers, Wheelwrights, and Motor Builders' Trade Unions" which, as well as fixing rates for firms within a twenty mile radius of Charing Cross, also stipulated "The piecemaster system shall be abolished".¹⁷¹

Coventry

It was in Coventry that the first organised blow appears to have been struck against the piecemaster system. Early in 1913 at Swift, an LPCTU member offered to take on a job at a rate that a UKSC member had refused, and to employ cheap labour - two at 3d per hour, one at 7d, and one at 8d. A shop meeting overruled him, though at a union investigation he denied

wanting to introduce the piece-boss system.¹⁷² Shortly after this, the Coventry UKSC branch set in motion the train of events that led to the abolition of the "notorious" piecemaster system.¹⁷³

But despite the September 1913 agreement with the Coventry employers (see section C above), piece-bosses did not disappear overnight. In October 1913 they were believed to be operating in at least two departments at Charlesworth; and in July 1914 at least one was proved to be functioning there.¹⁷⁴ The chargehand in the Rover paint shop was also believed to be one, refusing to show his book; though eventually the piecework balance above time and a quarter was shared out.¹⁷⁵ Four UKSC members from Swift were summoned to the branch in May 1914 under suspicion of the system operating in that firm. It later transpired that a round robin in the paint shop had decided to return to the old system, though a meeting of all Swift workers decided the painters should not tolerate the piece-boss system.¹⁷⁶

A few weeks later there was a complaint that a charge hand at one firm had got £90 for work done, and that his supervising money came out of the job price, and not from the firm.¹⁷⁷ There were other occasional accusations of the piecemaster system in Coventry in the next couple of years. For example, a non-union man at Humber, who was also a shareholder in the firm, having one man working for him at 9d per hour, with a boy at 5d per hour, another boy at 5s per week "and what they call a shop boy who spends most of his time with him."¹⁷⁸

When the joint union committee considered suggestions for a new agreement with the employers in 1915, they were unhappy with the gang

system and the system "where several are working together". The committee proposed replacing this by working in pairs where possible "in order to prevent a certain amount of twisting which unfortunately takes place in certain shops." This was seen as "a deep question", though the "pairs" system did operate among bodymakers in Coventry in the 1920s.¹⁷⁹

Final disappearance of the system

The first NUVB rule book in 1919 declared "no member shall be permitted to become a piecemaster or sub-contractor" or in any way be in a position of "exploiting the labour of his fellow-workers", such as a charge-hand paid a bonus for increased output by the men under his charge. Members acting in defiance of this rule could be expelled at a second offence. But while an inter-war survey of London industry claimed that by the first world war the piece-boss system "had been virtually displaced" in coachmaking,¹⁸⁰ it lingered on in the 1920s, despite union rules and the collective agreements with the NFVT initially in London, and then nationally. One reason, no doubt, was that not all piecemasters were union members and not all coachbuilding firms were party to the agreements. The NUVB London District Committee noted sub-contracting in 1921, and complained that a "flying" trimmer had control at the Victoria Coachworks.¹⁸¹ In 1922 the piecemaster system was found in the Motor Bodies Corporation, Whitlock's, and in the Regent Carriage Company, where the two piecemasters were both NUVB members.¹⁸²

In Reading in 1923 an attempt to introduce a piecemaster system failed and the NUVB was able to get the employer to make a complete repayment of

health and unemployment insurance stamps to members.¹⁸³ In 1924, it was again operating among bodymakers at the Regent Carriage Company, and there were complaints of the apathy of members concerning it.¹⁸⁴ During the next year, a member who had refused to work for a piece-boss at H.J. Mulliners had his state benefit stopped, but successfully appealed. The system was reported to be "in full blast" at the Chelsea Carriage Company, also in 1925, and a delegate to the London Shop Stewards' Conference reported the prevalence of the system in the London area.¹⁸⁵ However, in November of that year, the NUVB got Alford & Alder to operate national piecework terms, the men to share the balance as per rate, and no piecemasters.¹⁸⁶

Interestingly, the Chelsea Carriage Company, the Regent Carriage Company, and Alford & Alder were not members of the NFVT during the inter-war period, and H.J. Mulliners resigned in June 1925. Other problems were reported as late as 1928, though Halliwell claimed that where cases came to light the London District Committee had successfully put them down.¹⁸⁷ There were even some difficulties in Coventry, at Cross & Ellis in 1926, which led the branch to propose an amendment of the existing rule on piecemasters in 1928.¹⁸⁸

However, these problems were minor compared to the past. The general removal of the piecemaster system from the coachbuilding industry by the end of the first world war gave London coachmaking trade unionism a tremendous boost. With its rapid membership expansion in London, the NUVB's formation in 1919 signified that, for the first time, there was a genuinely national union in the industry.

PART II

THE INTERWAR YEARS.

INTRODUCTION

The Union

The NUVB was formally constituted in 1919 when the UKSC merged with the approximately 2,000 strong London & Provincial Coachmakers' Trade Union¹ and two tiny London societies with less than 100 members each.² In a burst of growth, the new union numbered nearly 24,000 by the end of the year. Five years later the mainly northern-based Amalgamated Wheelwrights, Smiths and Kindred Trades Union brought in another 4,400 members,³ while in 1947 the London-based Wheelwrights and Coachmakers Operatives Union joined with just over 1,000 members.⁴

Although this thesis is not an institutional history, it does require some knowledge of the union's governmental structure, so a few comments are in order now. Throughout most of the interwar period, the union had two full-time officials in the Manchester Head Office, two in London, and organisers based in Birmingham, Manchester, Glasgow and Dublin. As well as these, one of the union's Assistant General Secretaries, Joe Compton, was an M.P. for most of the period, and generally concentrated his union work on the railway workshops. The executive committee was lay in composition, and regionally based; its numbers in the 1920s reflected the amalgamations but settled at eleven, with an "emergency" committee of three meeting as and when necessary. "Delegate Meetings" were called for revision of rules, but this only happened four times in the twenty years after 1919. Policy was decided nationally, by the executive or

specially convened ad hoc conferences, or locally, by branch or district committees. The variegated nature of the membership and the differing collective agreements often made nationally uniform policies inappropriate.

Every quarter there was a conference of branches in each EC district, known usually as an "Area Council", though these bodies did not have any significant powers. There was the opportunity in any town with more than one branch to set up a "District Committee" which did have some local powers, and these operated especially in London and Birmingham. While branches met monthly, with fines levied for non-attendance at quarterly meetings, the real branch power, especially in the larger branches, was the branch committee which effectively decided the branch's policy, either directly or by recommendation. Branch officers normally dealt with local disputes with employers, and a number of the larger branches sustained full-time branch secretaries who could deal with issues as they arose, only involving the full-time organiser when necessary.

The industry

While the car industry is the main focus of Part II of this thesis, the NUVB's policies in the interwar years cannot be understood without a clear knowledge of the other sectors organised by the union. Hence a few points need to be made about employment in the various vehicle building sectors. Figures from the census returns for England and Wales in 1921 and 1931 are detailed in Appendix 3. Their analysis leads to two conclusions.

The first is that the bulk of vehicle building in 1931 was still outside the car industry, although there had been a definite shift in the 1920s. In 1921 the number of coachbuilders and painters (either vehicle painters or including all categories) in the car industry, both represented about one fifth of their overall total in the vehicle building industry, while trimmers were higher at about one third. By 1931, the proportions had increased to about one quarter for both coachbuilders and painters, and to two fifths for trimmers.

Secondly, given that, in 1931, most vehicle building work outside the car industry, and some work inside the car industry, was performed by skilled workers, then in that year the potential membership of the union was still one that was predominantly skilled. If comparable figures for Scotland and Ireland had been added in, these conclusions would be even further reinforced.

The Employers

Finally, a note on the employers. While many NUVB members were employed in firms affiliated to the Engineering Employers Federation and in the 4 railway companies, the union always considered its agreement with the National Federation of Vehicle Trades as the one that set the standards for the trade. Appendix 4 gives information on this employers' organisation and on the NUVB's collective agreements with it.

CHAPTER 5. VEHICLE BUILDING BETWEEN THE WARS.

PART 1. CARMAKERS AND COACHBUILDERS

INTRODUCTION

The British car industry underwent a fundamental change in the interwar period. The rise of mass production, coupled with flow production techniques, marked a total break with the low production pre-1914 industry. There were three distinct phases in this transition, delineated by changes in the size of the market.

The estimated 1913 output level of 34,000 of cars and commercial vehicles was surpassed by cars alone in 1920, before the depressed market saw car production fall back substantially in 1921, but from 1922 through to 1927 there was continuous growth. The period 1928-1932 saw a relatively static market, before rapid expansion more than doubled the 1932 output figure by 1937. Most of the output increase in the early 1920s was due to Austin and Morris, though the latter's rise was more spectacular. The second period of expansion saw four other firms join them - Ford, Vauxhall, Standard, and Rootes - to form the "Big Six", accounting for 90% of annual car production in Britain from about 1935 onwards.¹

The mass producers concentrated on the "cheaper end" of the market, and once they were established, other firms could only survive in the longer term by imitating them or cultivating an up-market niche. In the mid to

late 1920's, both Clyno and Singer made the breakthrough above the annual production figure of 10,000, below which all, except the mass producers, Morris, Austin, and Ford, were stuck; but they were unable to sustain this, even though Singer reputedly reached 28,000 one year.²

Relatively few production figures are easily accessible for the inter-war period, but from some that do exist, it is possible to contrast the rise of Morris and Austin with the production figures of the medium-scale producer, Rover, and the small-scale Vauxhall, in the 1920's.³

Table 5:1 Annual production figures, Morris, Austin, Rover, Vauxhall, 1919-1929.

	<u>Morris</u>	<u>Austin</u>	<u>Rover</u>	<u>Vauxhall</u>
1919	360	c.200		576
1920	1,932	4,319	1,400	691
1921	3,077	2,246	4,603	482
1922	6,956	2,559	6,466	659
1923	20,048	6,417	5,217	1,444
1924	32,918	9,673	6,746	1,444
1925	53,582	16,429	5,977	1,398
1926	48,330	24,900	5,363	1,527
1927	61,632	37,520	4,183	751
1928	55,480	44,654	3,766	2,560
1929	63,522	46,029	7,225	1,668

The key development of the 1930s was, as mentioned above, the rise and consolidation of the "Big Six" car firms. However, existing accounts give the impression that this occurred earlier than it actually did. A table produced by Maxcy & Silberston, and its subsequent modification by Rhys, is

the basis for this.⁴ In fact, Ford was an even more negligible car producer in the years 1928-31 than has been suggested, and Vauxhall's breakthrough from being a tiny car producer did not occur until 1933, not 1930.

The significance of a later date for the emergence of the Big Six is that, in 1931, when the NUVB opened its ranks to all men and women in vehicle building, the car industry was still a "duopoly", with all the other companies small or medium-sized. This situation had obtained for a number of years, and at that stage the union could not have anticipated any rapid change. The union's introduction of the "Industrial Section" (see chapter 7), therefore, was not a response to a sudden change in market domination. An estimate of the annual production totals of the Big Six is given below. This is subject to a number of qualifications which are fully explained in Appendix 5.

Table 5:2 Estimated Big Six car production 1929-39.

	<u>Austin</u>	<u>Morris</u>	<u>Ford</u>	<u>Vauxhall</u>	<u>Rootes</u>	<u>Standard</u>
1929	46,029	63,522	n/a	1,668	5,500	6,000
1930	39,251	58,436	n/a	1,277	8,100	7,500
1931	39,676	43,582	n/a	3,492	7,600	11,900
1932	43,802	50,337	11,900	2,136	11,000	17,400
1933	57,741	44,049	36,400	9,949	14,100	13,750
1934	68,291	58,248	34,500	20,227	17,200	17,000
1935	73,562	96,512	48,500	22,118	24,300	22,800
1936	71,855	100,200	74,900	17,640	31,600	32,700
1937	89,175	95,900	77,800	30,616	33,000	33,750
1938	60,224	80,500	59,900	32,224	34,800	33,750
1939	57,367	73,800	48,000	34,367	29,900	35,100

The table shows that it was not until 1935 that all of the Big Six were producing over 20,000 cars a year. Their success did not significantly affect the production from the smaller companies which was in the region of 35,000-45,000 cars per annum throughout the 1930's. However, with the big shake-out of companies in the 1920s and beginning of the 1930s, the smaller companies' share was a decline from the 60,000-80,000 cars a year produced by companies outside the "Big Two" (Austin and Morris) in the smaller market of 1924-30.

The survival of smaller companies in the 1930s (including Wolseley and M.G. which were part of the Nuffield Group, and the low volume Humber (part of Rootes)), with more craft-based production methods, meant that employment in the industry remained higher than it would have done had the industry totally gone over to mass production. Further, car manufacturers continued to use outside coachbuilders to produce special bodies, which also kept alive bodymaking skills and sustained employment in the industry. This practice will be explored in section A, while section B concentrates on the development of the assembly line and other processes affecting the division of labour.

A. COACHBUILDERS' WORK FOR CAR MANUFACTURERS

Although throughout the inter-war period, the majority of car bodies produced were built by chassis manufacturers, there was always a substantial volume of trade for independent bodybuilding firms. But once the technology of steel body production had got over its initial teething problems, the large number of traditional coachbuilding concerns with their ash-framed and panel-beaten car bodies found powerful new rivals in a very small number of firms with press shops and spot welding technology.

While the rise of the steel body producers will be charted in chapter 6, there will be some mention of them in this section, which otherwise concentrates on the traditional coachbuilders. Pressed Steel, followed by Briggs, and then Fisher & Ludlow, were responsible for a big increase in the output of independent bodybuilding firms in the 1930s, as well as squeezing many smaller traditional firms out of the market. While the census of production picked up 212 car body builders in 1930, five years later, only 98 produced a much bigger absolute and relative total.

Table 5:3 Car and car body production, 1930-37.

	<u>1930</u>	<u>1934</u>	<u>1935</u>	<u>1937</u>
Total cars, taxis & chassis	(169,669)	(256,866)	349,316	402,159
Bodies produced separately	est.46,500	93,116	134,143	171,581
Percentage of separate bodies	27.5%	36.3%	38.4%	42.7%

(The figures in brackets are for the year to September from SMMT sources, while all the other figures are for calendar years).

Employment figures for firms supplying car and commercial vehicle bodies grew much slower than output, though they rose significantly in the early 1930s due to the growth of Pressed Steel and the establishment of Briggs:

Table 5:4 Employment in bodybuilding firms, 1924-35.

<u>1924</u>	<u>1930</u>	<u>1935</u>
26,475	26,251	32,466

The 1935 employment figure compares with 75,267 employed in firms producing complete cars and chassis, 20,238 producing complete commercial vehicles and chassis, and 74,013 producing parts and accessories for motor vehicles, motor cycles, and cycles. With firms producing commercial vehicle bodies including omnibuses being responsible for about a quarter of total commercial vehicle body production by volume in 1930,⁵ it is clear that independent body builders, outside of the steel body producers, still formed an important part of the industry in their own right.

The market that independent car body builders served was formed of at least five distinct components. Firstly, there was the demand for individual coachbuilt bodies which straddled all sections of the market, where customers would order a chassis from a manufacturer and order the body separately. This was very common at the luxury end of the market, where a number of firms, of which Rolls Royce was the most prominent, did not make any bodies at all themselves. Then there were a few car firms, in particular Alvis, who had no bodybuilding facilities and in the main ordered batches of standardised bodies from a small number of

coachbuilders. Thirdly, some car companies took advantage of the variety of different bodies available to augment their range by contracting out particular bodywork to "approved" coachbuilders and then selling these products through their own distributors. This practice was very important for a number of medium-sized car producers at different periods. Fourthly, the increased demand for fabric bodies at the end of the 1920s, led most companies, including the biggest, to contract out part of this work to coachbuilders. Finally, some coachbuilders developed a reputation for bodies on certain chassis, so that the end result was almost a separate product, such as Swallow and Avon bodies on Standard chassis, and Swallow on the Austin 7.

The existence of a large number of firms supplying bodies to vehicle manufacturers also affected the level of potential NUVB membership. Before the rise of the steel body builders, and, after their rise, outside of them, the vast majority of employees in the coachbuilding firms were potential NUVB members. At around perhaps 20,000, the potential membership in these firms probably outnumbered the potential membership in the vehicle manufacturers themselves (see Appendix 3).

It took a number of years before the technique of building pressed steel bodies was viable as an economic replacement for the traditional composite body, but by the early 1930s most of the Big 6 were building, or having built, their standard models in this way.⁶ There was, however, still a substantial market for traditional coachbuilding firms. Most model ranges offered tourers, convertibles, and coupes, as well as their standard saloons; and, unless demand for these was above 1,000 or 2,000 a year, the

large producers rarely built their own special coachwork. This meant a continuing flow of work for the batch-production producers.

But once unitary construction was first adopted for new body shells in the late 1930s, the writing was definitely on the wall for these coachbuilders. Their trade was producing special shells on separate chassis frames, not doing major re-builds of stress-bearing unit construction shells. The war, followed by the continuation of pre-war models in the immediate post-war period, delayed the start of their rapid decline until the end of the 1940s.⁷

No writer on the inter-war car industry has analysed in any detail the overall relationship between the car manufacturers and the coachbuilders. Consequently, it has been necessary to make use of a variety of sources to build up a picture which shows how necessary the coachbuilders were to the car manufacturers. This will further demonstrate that, even in the car industry, NUVB claims to being a union of "vehicle builders" were rooted in the material reality of the inter-war period, which was not immediately destroyed by the rise of mass production in the 1920s.

The Big Six

(1) Austin

Austin were an important user of outside coachbuilding firms in the inter-war period. The Austin 7, produced from 1922 to 1937, was responsible for most of this trade and detailed figures exist for 1928-1932.⁸

Table 5:5 Austin 7 body sourcing, 1928-1932.

	<u>1928</u>	<u>1929</u>	<u>1930</u>	<u>1931</u>	<u>1932</u>
Startin	316	391	631	50	-
Mulliner	2881	2667	1309	516	18
Gordon England	2033	1281	234	-	-
other separate chassis	2719	4430	1528	752	620
total bodies not built by Austin	7949	8769	3702	1318	638
Total Austin 7 production	22709	26447	23826	21282	20121

Of the bodybuilders mentioned in the table, Mulliner produced fabric saloons, vans, sports, two-seaters, and some War Office vehicles; the fabric saloon appearing in August 1927, and accounting for over 90% of Mulliner's work for Austin.⁹ Gordon England built "Super-Sports" cars, as well as saloons, a fabric 2-seater, milk vans, and vans. Over 2,000 Austin 7s had passed through their works before the end of 1927.¹⁰ Finally, Startin produced vans from August 1925.¹¹

The first Swallow Austin 7 was produced in April 1927; the more famous Swallow saloon was ready for the 1928 Motor Show, and Austin Swallows continued in production until October 1932.¹² Among the firms offering special bodywork on the Austin 7 chassis were Duple in the late 1920s, and Hoyal in 1931. But apart from the firms mentioned, and Avon of Warwick, most of them were very small concerns.¹³ Where special bodywork was successful, Austin would later produce their own version. The success of

coachbuilders' 2-seater Austin 7 bodies led the company to offer a standard works coupe from 1928, though less than 600 were made in the next 4 years.¹⁴ Mulliner bodied over 150 Austin chassis for the War Office in 1929-30, before Austin took over the bodywork during 1932-37.¹⁵ More significantly, because the Startin-bodied van was popular, Austin introduced its own, with more than 10,000 being produced between 1931 and 1935.¹⁶

The peak period for outside bodybuilders on the Austin 7 chassis was the late 1920s, but separate chassis were still produced after this date: in 1933 - 789; 1934 - 713; and in 1935, the peak year of Austin 7 production, when 27,280 were built, 1,392 of these were in the form of chassis as that year saw an upsurge of interest in the sports chassis.¹⁷

Austin's other models also generated work for outside coachbuilders.¹⁸ Overall, the Birmingham coachbuilding firms of Mulliner, Gordon and Startin had the biggest spin-off from Austin - Startin, as well as its vans on the "7", produced the last body on the big Austin 20-4 in 1929; and there were no less than 8 different types of Gordon Austins in 1932, sold through Austin dealers.¹⁹ A substantial amount of work was also generated by chassis produced for taxis. Taxicab versions of the Austin 12-4 chassis had been operating in provincial centres such as Manchester and Liverpool in the 1920s, but their turning circle was too great to be allowed in London. Austin were persuaded to rectify this and their cabs started plying for hire in London streets in June 1930. They soon dominated the London taxi market, some 5,800 being delivered in the period 1930-37 compared to just over 2,000 other makes. The bodies all appear to have been built by outside

coachbuilders, mainly London firms, such as Strachan, the Chelsea Carriage Company, and Birch Bros.²⁰ In 1948, the Austin FX3 taxicab was brought out, with a steel body produced solely by Carbodies, being superseded in 1958 by the familiar shape of the current FX4, also bodied by Carbodies.²¹

Late in 1929, Sir Herbert Austin voiced his concern at a directors' meeting concerning the fact that over one million pounds worth of bodies had been made for Austin by outside coachbuilders in the previous 2 years, and proposed that the company should make all the bodies inside the Longbridge factory in order to reduce costs. This was countered by another director who explained, "Two years ago when fabric bodies became fashionable certain bodies were made by coachbuilders when we were not ready or could not prepare models in time for the demand". He continued by arguing that anyway there was a definite demand by a section of the public for special bodies "and by refusing to supply these we should definitely lose a substantial sale of chassis". As well as selling chassis direct to those customers who arranged their own bodywork, the company made a profit on all bodies it contracted directly to coachbuilders; and he believed the factory should concentrate on standard products. Austin himself became reconciled to this view and some three years later argued that the firm should cultivate extra trade by getting outside coachbuilders to build special bodies on Austin chassis.²²

(ii) Nuffield

Austin's big rival, Morris, did not use outside coachbuilders to the same extent for the products of its Cowley factory. This was partly, if not

mainly, because it bought its main body supplier, Hollick & Pratt, and used the latter's Coventry factory for non-standard products. Of course, there were a number of special bodies on Morris chassis that were built by other coachbuilders. Stewart & Ardern, their London distributors, supplied special bodies on Morris chassis from 1916, sub-contracting the work to coachbuilders. "Many Stewart & Ardern designs appear to have inspired Morris to produce similar standard models later". For example, before Morris included a fabric saloon as a standard model in the Morris Oxford range in 1929, fabric bodies were available on their chassis from such concerns as Gordon England.²³ This firm, along with Hoyal, were the most prominent coachbuilders used in the late 1920s, while Cunard, which was taken over by Stewart & Ardern, was widely used in the 1930s, doing most of its work for Morris.²⁴ The Morris subsidiaries of M.G. and Wolseley also used coachbuilders.

The Wolseley Hornet did much to preserve the tradition of custom coachwork. In 1931 and 1932, 19 different variants were offered by 10 coachbuilders on the standard chassis alone. Whittingham & Mitchell were one firm whose output was largely made up of sporting styles commissioned by Wolseley's London distributor, until the Hornet finished in 1935.²⁵ M.G., starting up in 1922, used Carbodies of Coventry for most of its early bodies, and Gordon England, a sports car body specialist, made some in the late 1920s. But from this date and throughout the 1930s, as the firm expanded its output, most M.G. bodywork seems to have come from the Morris Bodies factory in Coventry (which also produced Post Office and other commercial van bodies, and Morris Commercial taxicabs), though some bodies were made by Tickfords and Charlesworth in the late 1930s.²⁶

(iii) Rootes

There is a relative dearth of published material on the Rootes Group and its constituent companies, but it is clear that they also used outside coachbuilders. While Hillman were noted in 1924 of making "a special point of building their own bodies", they were certainly using the local Holbrook Bodies three years later;²⁷ and Humber used some small Coventry coachbuilders and Avon of Warwick in the early 1920s.²⁸ However, both Hillman and Humber were fairly low volume producers in the 1920s, and the big expansion of output in the 1930s was centred on the Hillman Minx, for which a large number of bodies were produced at Pressed Steel at Cowley. Humber, though, continued producing big cars in the 1930s, and these were ideal for coachbuilders such as Carbodies and Mulliners and Rootes's own subsidiary, the London coachbuilder Thrupp & Maberley.²⁹

(iv) Standard

Standard Motors in Coventry, like Austin, also wrestled with the issue of whether it should build all its own bodies or contract some out. Avon of Warwick were doing Standard work at least as early as 1922, as was another Coventry coachbuilder.³⁰ In June 1924 the directors sanctioned 960 bodies for the V3 chassis in the following proportions: of 710 4-seaters, Standard would build 460 and the Avon Body Company the other 250; while Midland Light Bodies of Coventry would build all 250 2-seaters.³¹ But a year later the directors decided that "wherever possible" bodies should be made in the company's own shops, though sanctions for bodies in January 1926 showed some 300 scheduled to be built by Avon, and 100 by other coachbuilders.³²

Like Austin and other firms, Standard also found itself using at least one outside firm, Hoyal of Weybridge, to build fabric bodies, this being a contract for 250 saloons in 1927, while Gordon England were contracted to build 150 of their special bodies on Standard chassis in 1928.³³ With Standard's expansion from the early 1930s onward, the traditional coachbuilders' share of Standard body output became increasingly less important (though, as will be detailed in chapter 6, the suppliers of all-steel bodies rapidly took over much of the company's body production).

Table 5:6 Standard body and chassis production 1931/32-1932/33.

	<u>1931/32</u> ³⁴	<u>1932/33</u> ³⁵
Standard bodies and chassis complete	16,807	17,887
<u>Chassis only: SS</u>	775	1,525
Swallow	87	5
Arrow	30	-
Avon	380	305
Mulliner	200	-
Holbrook	-	51
Arnold	60	7
direct to customers	36	41
van chassis	-	4
unassembled for export	525	975
<u>TOTAL CHASSIS</u>	<u>18,700</u>	<u>20,800</u>

The Standard Swallow was now giving way to Standard chassis being marketed under the SS name. The Standard Avon, available from 1929, was, like the Standard Swallow, almost a separate make. Avon continued to produce special bodies in quantity for Standard, though it fell into financial difficulties late in 1936, producing its last body for them in

1937.³⁵ Mulliner, which had been negotiating orders with Standard in the mid-1930s, then secured a substantial order for a coupe body in 1938.³⁷

(v) Vauxhall

Vauxhall was a traditionally large user of coachbuilding firms. Until the first world war "there was almost no such thing as a 'standard' Vauxhall car." Throughout the 1920s, Vauxhall remained a small producer, mainly producing cars with a high price-tag, competing with Rolls-Royce, Bentley and Sunbeam. Consequently "the little Luton factory concentrated mainly on building chassis; most bodywork was farmed out to specialist firms, with Grosvenor [the Grosvenor Carriage Company] probably taking the lion's share".³⁸

It was not until 1930 that there was the first visible sign of the General Motors takeover of 1925. The Vauxhall Cadet of 1930-33 was aimed at the low-priced popular family car market. Soon after its launch, though, a variety of bodywork was being offered by outside coachbuilders, many being included in official Vauxhall catalogues - for example, Martin Walter of Folkestone, Duple, Grose of Northampton, Salmons, and Hoyal. When the Cadet's successor, the Light Six, was launched in mid-1933, apart from the standard saloon, there were sports tourers, coupes, a doctor's coupe, fabric saloons, roadsters and others from firms such as Whittingham & Mitchell, Cross & Ellis, and a number of those listed above. Similarly, with the launch of the Big "6" at the end of the year, there were also soon special bodies on this - including a 7-seater luxury limousine from Grosvenor.

Vauxhall production expanded rapidly - nearly 10,000 cars in 1933, and 20,000 in 1934. And in 1935, with the new D-type models, over 26,000 were produced. The 1935-36 Vauxhall came with three basic chassis, but there were well over 20 different body options available. However, it is clear that the coachbuilders' days were numbered.³⁹ In 1936-37 Vauxhall spent a million pounds developing a new 10hp car with the chassis integral with the body, the Vauxhall "10-4" being launched in October 1937. By January 1938 it was making 70 a day of these compared to 47 a day of those models with separate chassis.⁴⁰

Later in 1938 unit construction versions of the "12" and then the "14" were introduced, and the only model with a separate chassis, the 25hp, produced at the rate of 12 a day in early 1938, was phased out during 1939. As a consequence, coachbuilders Martin Walter switched to the production of utility versions of the Vauxhall-based Bedford light van. This firm did not totally sever its connection with Vauxhall, producing an estate car conversion of the Vauxhall Cresta in 1963, but this was a very different relationship to the pre-war days. Other coachbuilders also did specialist conversions, sometimes only involving interior finishing. Grosvenor's post-war work for Vauxhall was similarly very limited, producing, for example, a "woody" estate car version of the Wyvern.⁴¹

(vi) Ford

The remaining member of the "Big Six", Ford, generally built or assembled its own bodies at Trafford Park. Some coachbuilders made special bodies before the first world war,⁴² and, given the versatility of the

Model T chassis, produced up until 1927, many special commercial vehicle bodies were built on it. With Ford's move south to Dagenham in 1931, body production was taken over by its new neighbour Briggs Bodies.

The medium-sized producers

Clyno, one of the biggest producers in the mid to late 1920s, bought in all its bodywork. Taylors made most of the bodies until Hayward Motor bodies, an A.J.S. subsidiary, built the fabric coachwork for the Clyno 9 in 1928-29.⁴³

Rover, a medium-sized producer throughout the inter-war period, reached an agreement in 1920 that Midland Light Bodies of Coventry should supply them with bodies, giving them first call on their output. In return, Rover helped to finance that company's investment programme. It is not clear what proportion of Rover's bodywork this firm produced during the 1920s, but Rover decided in 1929 to produce these bodies themselves and acquired a new site for that purpose. The cost of car bodies was reduced from the "bought-out" price of £85 to £55, the savings on 4,000 bodies being equal to the firm's profits for 1928-29.⁴⁴ But in the late 1920s and early 1930s Rover had "too many body options for economical production". The 2-litre model, for example, had no fewer than 11 body styles in the 1930 range. As Autocar commented "It is a well-known fact that no factory can profitably produce a range of bodies, on all chassis, sufficiently comprehensive to meet the requirements of every purchaser". For the 1932 season, therefore, Rover made an arrangement whereby an agent handled all specialised bodies. Nine different coachbuilders produced 34 different bodies - Carbodies, Swallow,

and Charlesworth of Coventry, and Weymann, Maddox, Salmons, Whittingham & Mitchell, Grose, and Pressed Steel which finished and equipped its existing Rover body shell in an exclusive manner.⁴⁵

This policy was soon reversed, and while special bodies were still available from coachbuilders, financial constraints forced the company to rationalise its range. By 1937 they were down to two basic body styles and while the 1937 season models were offered in chassis-only form, this was a dying practice, and very few of Rover's cars in the 1939-47 period were fitted with non-standard coachwork. "By the mid-1930s, the professional man no longer bought a coachbuilt body for his chosen chassis as a matter of course; he settled for the body offered by the chassis manufacturer".⁴⁶

Riley, another medium-sized Coventry company, had many of its bodies made by an associated body factory, known from 1919 to 1931 as the Midland Motor Body Company.⁴⁷ The small Coventry firm of Hancock & Warman also produced a wide range of Riley bodies including many fabric ones until a fire forced it to close down in 1930.⁴⁸ Riley gradually embraced pressed steel bodywork in the mid to late 1930s, though there were still special bodies from firms such as Arthur Mulliner and Grose, both of Northampton.⁴⁹ Little is known about Armstrong-Siddeley, though the Bristol Aeroplane Co were building some bodies for them in the early 1920s, and Holbrook Bodies produced quite a number later in the decade; while Mulliner had a substantial order in the late 1930s.⁵⁰

Alvis was a Coventry company with no bodybuilding facility, and all their chassis went to outside coachbuilders - nearly 14,500 in the whole

inter-war period. Morgan of Leighton Buzzard built some 770 open tourer bodies for the first model between 1920-22. After that, local coachbuilders dominated Alvis work, building perhaps 90% of the subsequent inter-war bodies. Cross & Ellis were involved on most of the models throughout the period; the other 3 tended to follow each other roughly chronologically, with Carbodies building for the earlier models, Holbrook for the middle, and Charlesworth for the later.⁵¹ The other significant coachbuilder for Alvis was Vanden Plas.⁵²

On a number of occasions, Alvis directors seriously contemplated building their own coachwork. Right throughout the period there were problems with outside coachbuilders - defective coachwork, bodies not supplied on time, and so on. In 1928 the company considered a closer relationship with Carbodies, on the opposite side of Holyhead Road. Although in 1930 the Board decided against undertaking their own coachwork, they considered buying up either Swift or Holbrook Bodies in the early 1930s. But, for a variety of reasons, these plans went no further, and in about 1932 Alvis appointed its first Body Engineer, during whose time of office, the company employed resident inspectors at each coachbuilder used.⁵³ Alvis's failure to supply its own bodywork was to become a contributory factor to its downfall as a car producer in the 1960s.⁵⁴

Lea Francis, another Coventry firm with no body shop, was a much smaller producer, making perhaps less than a thousand cars in the inter-war years. This company, not surprisingly, relied mainly on local coachbuilders, such as Robinsons and Cross & Ellis of Coventry, and Avon of Warwick.⁵⁵

The luxury car producers

In the luxury car market, a number of firms concentrated on the chassis only. Napier had produced only 187 cars, all bodied by Cunard, before production discontinued in 1924.⁵⁵ Bentley, based in Cricklewood in north west London, produced just over 3,000 chassis from the end of the first war until 1931, when it closed down and was absorbed by Rolls-Royce. It had no body shop and used most of the high class London coachbuilders for body supplies, Vanden Plas producing the largest number, especially open coachwork, (most of their bodies in the 1920s were for Bentley) along with H.J.Mulliner, Thrupp & Maberly, Park Ward, and Freestone & Webb.⁵⁷

Rolls-Royce similarly had no bodybuilding facilities of its own, and between 1923 and 1929, for example, almost 3,000 Rolls-Royce 20's went to coachbuilders, generating a tremendous amount of work.⁵⁸ It has been estimated that those firms specialising in coachwork on the Rolls-Royce class of chassis averaged, at most, an aggregate of 1,500 bodies annually in the years before the second world war (Park Ward, for example, building most of the 1930s' Bentleys).⁵⁹

Lanchester, however, usually made its own bodies until its takeover by Daimler in 1931.⁶⁰ Daimler, similarly, made most of its own bodies in the 1920s, offering, for example, no less than 54 different body styles in 1923. For their larger chassis, they supplied to coachbuilders a separate steel body frame which fitted the chassis, and enabled coachwork to be started before a chassis was delivered.⁶¹ But, in 1930, Daimler closed down its own coachwork department (see chapter 8), and for a number of years

Daimler and Lanchester shipped out all their chassis to coachbuilders. As well as firms like Hoopers, who always built the Daimlers for the Royal Family, and other high-class firms, the beneficiaries included firms like Holbrooks, Mulliners, and Charlesworth.⁶² In the late 1930s, Daimler took over the London coachbuilding firms of Hooper and Barker, while Rolls-Royce took over Park Ward.⁶³

Early in 1933 Daimler placed an order with Mulliner of Birmingham for 3,000 Daimler and Lanchester saloons for the 1934 season, and later that year reached an agreement that Mulliner would supply a minimum of 80% of the total requirement of bodies for Daimler and Lanchester chassis for the next 3 years.⁶⁴ Within a year the agreement had been modified. Daimler would only build a maximum of 400 Lanchesters for the 1935 season, but up to 25% of its total body requirements for the 1936 season. Mulliners, in order to discourage this trend, offered an increasing rebate on turnover placed with them by Daimler, and started negotiating for the production of bodies for BSA, which was part of the same group as Daimler.⁶⁵

In practice, some 1,500 bodies were carried forward into the 1935 season from the 1934 stock; and the initial 1935 season contract for 7,200 BSA, Daimler, and Lanchester bodies was scaled down to about 4,000 halfway through the season. While Mulliners could claim some compensation, they did not put in the large claim to which they were entitled "as a large claim for compensation would alarm them and result in their making arrangements to build their own bodies at Coventry". At the same time Mulliners secured a contract to supply all bodies for the 10 and 12hp Lanchesters and the 15hp Daimler for the 1936 season. "In order to secure the whole of this

business and to ensure that they did not themselves commence production of these bodies it had been necessary to make some concessions in prices".⁶⁶ Once again, though, halfway through the season, the balance of the contract was cancelled, with Daimler coming to a financial understanding with Mulliner, who were left with a certain amount of unsold stock. At the same time Mulliners retained the Daimler contract for the 1937 season.⁶⁷

The relationship between Daimler and Mulliner was probably not untypical for the component industry generally, and exemplified the situation of those car manufacturers who contracted out all or most of their bodywork to batch production coachbuilders (as opposed to the more specialist one-off coachbuilders). Further substantial Daimler orders were placed for the 1938 season, and Mulliner spent £2,000 on paint drying ovens to ensure conformity with Daimler's own products. Despite this investment, Mulliner again experienced delay in Daimler taking their bodies.⁶⁸ Early in 1938 the Mulliner board agreed to negotiate with Daimler to stop them building their own bodies and to place the whole of their business with Mulliner, even though they recognised this would mean the extension of their own factories. Later that year when Daimler put out to tender the supply of 10,000 10hp Lanchester bodies, Mulliner "in the face of keen competition" quoted "a very low price", which was based on the cost of labour, materials, and overheads only. Despite this, the contract went to Briggs.⁶⁹

While traditional coachbuilders' work for motor car companies started to decline from the mid-1930s, it was, until then, a very important and relatively labour-intensive component of the inter-war car industry.

B. DIVISION OF LABOUR AND THE ASSEMBLY LINE

The motor car industry is often seen as the epitome of the moving assembly line, the ultimate logic of flow production techniques. Once Henry Ford had introduced the moving assembly line in Detroit for final assembly operations in 1914,⁷⁰ he had combined mass production with the most advanced form of flow production, and all other car manufacturers were forced eventually to emulate him because of the cost savings involved. Yet the introduction of the moving assembly line into British car factories was a very uneven process, both across the industry, and within individual factories. This had consequences for the relative sub-division of labour within different departments of car factories.

Assembly lines were adopted on chassis erection before they were on body building, for a number of reasons. Most cars were wood-framed until the early 1930s and these frames were generally put together in a stationary main assembly jig to ensure accuracy, while the parts that were assembled together during chassis erection did not require the intervention of any jigs. Chassis parts were also standardised at a fairly early date in the century, while body standardisation had to wait until the 1930s. As the technology of body-building, based around wooden frames, was relatively simple, a wide variety of body styles could be, and were, offered to the public. Changes in body styles could be effected fairly quickly, and were not very costly; and the practice of offering new models every "season" helped perpetuate this situation. A related factor was that in the late 1920s and early 1930s there were several different types of body

construction available - coachbuilt, fabric, pressed metal composite, and all-steel, which further fragmented the production facilities.

It was different in the paint, trim, and finishing areas. The replacement of paint by cellulose in the mid-1920s, and the developing practice of drying it in long ovens by pulling the bodies through, necessitated a moving line through the ovens, and a system of flow production before and after (though whether this was mechanised depended on the money available). Body trimming was not inherently different from the production of chassis, in that parts were fixed to the body in a certain order; and many finishing operations took place after the body had been mounted on the chassis, and did not require any specialised equipment.

While chassis assembly lines were adopted in many factories in the early 1920s, it was not until the late 1920s or early 1930s that these were mechanised in the larger factories. Until then they were primitive push tracks, relying on wheels or trolleys to allow easy movement forward. Consequently, work was performed with the chassis stationary, it being pushed between work stations. As with mechanised conveyors, the length of the assembly line dictated the number of chassis that could be put on it, and this in turn, along with the number of operatives employed, dictated the division of labour. The mechanised line did not alter this, though it had a number of extra advantages for the employer - for example, it avoided hourly variations in output, could pack vehicles much more closely together, and reduced material handling so that operators worked solely on the job in hand, not also as labourers.

Not surprisingly, the British plants of the big foreign car producers tended to copy their parent company's more advanced practice. Ford was the classic example, and was generally much more advanced in this sphere than any British company. Pressed Steel also brought in American technology with moving conveyors for its body assembly, paint and trim shops from its establishment in 1926.⁷¹ At the General Motors plant at Hendon, which was mainly producing Chevrolet trucks at the end of the 1920s, it was reported "the travelling conveyor line is used for assembly".⁷² The Citroen plant at Slough was also equipped with moving conveyors from the beginning of its operation there in the mid-1920s.⁷³

Chassis lines

Ford's works in Trafford Park had already by 1915 an endless chain conveyor in the chassis erection shop.⁷⁴ Apart from Ford, unmechanised chassis assembly lines developed in the industry generally in the early 1920s, even among the smaller mass producers. Thus, at Standard the company had built a small U-shaped chassis assembly line by 1921, on which each chassis was pushed by the assemblers to the next work station. A complete chassis was erected every 40 minutes, taking 8 hours to progress along the track, which held 10-12 at any one time.⁷⁵

In 1925 Vauxhall were producing 3 different models, one of which was erected progressively, taking 9 hours to move through 9 work stations, with only 25-30 being produced each week. The other two models had too few built to justify significant progressive assembly, and were erected at two stations only.⁷⁶ Hillman chassis were already moving forward by 1922, and

by 1929 the chassis line took advantage of "the natural gradient of the site, so that chassis are easily propelled along the line without the need for mechanical operation." It appears that on the "14" assembly line the cars were moved along in batches of 4.⁷⁷

Practice among other small-scale producers varied. Sunbeam had already established a system of flow production for chassis erection before the first world war. The chassis frame was delivered to a small gang of men, responsible for only one operation; it would then be hoisted along a girder tramway above and delivered to the next gang, who would do the following operation, and this was repeated right the way up the shop. In the mid-1920s, with an output of about 50 cars per week, the firm still had no assembly track as such, but wheels with tyres were bolted in position at an early stage so that the chassis could be moved easily along the shop as it neared completion.⁷⁸ Vulcan of Southport did have chassis erecting tracks, which were arranged on a slight gradient. Trolleys were placed under the axles and moved forward by hand until the wheels were fitted.⁷⁹

Crosley, producing about 60 cars, lorries, and tractors a week in early 1926, assembled all the chassis in situ right through the 1920s, and probably later.⁸⁰ At Daimler, until 1929 chassis were built on one spot "like the laying down of the keel of a ship" according to the works manager of the time. In that year, the chassis assembly was put on a progressive line basis, though it was not mechanised.⁸¹ Riley also had a chassis assembly line in the early 1930s,⁸² but little is known of many other small to medium Coventry car manufacturers.⁸³

At Morris Motors, 1919 saw the Cowley factory laid out for line production - "the chassis, as soon as it had its wheels on, moved from station to station, and the jobs were subdivided so as to synchronize with one another". By 1924, the one assembly line held 32 chassis; the time cycle at each work station was 2½ minutes, each chassis being completed in 80 minutes. These were propelled along a wooden track by hand once the wheels and tyres had been fitted. Thirty an hour came off this line in 1926.³⁴ When the Morris Minor was introduced in 1928, a separate line was laid down for Minor chassis, but still unmechanised; and temporary wheels were fitted on the axles until the regular wheels with tyres were fitted after the chassis had been spray-painted and oven-dried. While other factors dictated reorganisation in the trim and finish areas which was accompanied by mechanised lines (see below), the slump delayed the major reorganisation of chassis assembly, for which money had been set aside, until 1934. Then five separate mechanically propelled chassis lines were laid down, each chassis spending about 2½ hours on the assembly line, receiving attention from no fewer than 200 men.³⁵

A number of British manufacturers preceded Morris in this development, though not that much earlier. Some writers, eg Fridenson, have suggested that Austin had brought in moving lines in or by 1925. This is based on a misunderstanding of Austin's biographers' comments; while it is clear that moving conveyors had been introduced to shift certain components between shops, this was a far cry from wholesale mechanised assembly lines.³⁶ With the expansion of production, between 1924 and 1927 the whole Austin factory was reorganised, and practically every machine tool and process repositioned on a flow production basis. As a result, front and rear axles

were assembled on separate mechanical conveyors; gear boxes were assembled on a track, "being pushed on by hand from operation to operation"; and while a number of conveyors brought the major parts of engines together, it is unclear whether their assembly was on a moving track.²⁷

In 1925, though, Austin's 3 tracks for chassis erection were still unmechanised, and in 1928 the 20hp model, being produced in "comparatively smaller numbers" could not even be "arranged in the same progressive system". But in the latter year the company ordered mechanised tracks to be laid down as "production has now increased to a stage that warrants its application", and they were in operation within a year. By 1934 the 3 main chassis assembly lines, 330ft long, were moving at 2 or 3 ft per minute, with 65 men performing 40 major operations on each line.²⁸

Singer, a large producer in the late 1920s, could not introduce assembly lines into its cramped Coventry factories,²⁹ but installed a track system in a Birmingham factory bought in June 1927. Initially, the Singer Junior chassis was assembled on a track down which they were rolled as each operation was completed, with the result that the number of cars coming from the track varied from hour to hour. By the middle of 1930, however, a power-driven conveyor had been installed, assuring a uniform rate of output. The old track had taken up 50% more space, but only turned out 75% of the number of cars.³⁰ The other major producer in the mid to late 1920s, Clyno, built a new works in about 1926, and installed conveyors for chassis erection, but it is unlikely that these were mechanised.³¹

Mechanised tracks were brought in at three small to medium-sized producers at the beginning of the 1930s. The Standard Motor Company introduced moving conveyors into most parts of the Canley factory in the summer of 1931. A Standard chassis then passed through 12 6-minute stations, taking in all 72 minutes. These tracks were geared to producing ten complete cars every hour when the programme was launched in July 1931 (this figure being reached in October), increasing to 12 in the winter of 1931/32 and 16 by July 1932 (actually producing 15 during the following winter). The maximum line speed was further increased to 20 per hour in the summer of 1935, and during the next year, hourly production capacity was increased to 30. (Whether this involved laying down a duplicate chassis track, as well as the new engine assembly track, is not clear.)²²

Tiny Vauxhall Motors, through the financial backing of its parent company General Motors brought in a mechanised chassis assembly line in 1930. This would not have been justified by their output of cars in the early 1930s, but, from the start, commercial vehicle chassis were assembled on the same line in much larger quantities - initially Chevrolet models until Bedford trucks were introduced in 1931.²³ The success of the Hillman company (by then merged with Humber) at the 1929 Motor Show made it imperative for Rootes to reorganise the factories, so that very quickly there were conveyor lines in almost every department.²⁴

Therefore, Morris, the largest producer of the interwar period, not only mechanised its chassis lines after its six largest rivals, but also at a much greater level of annual output.²⁵ Mechanised lines, especially in conjunction with synchronised overhead conveyors for the movement of

components, clearly led to significant cost savings in material handling and storage. But the piecework system, operating in all car factories (except Ford), gave managements sufficient flexibility over their direct labour production costs to partly compensate for this.

Chassis assembly lines were also not confined just to the car factories. Apart from Vauxhall, the AEC bus and commercial vehicle chassis factory had been an early user of assembly lines, though their moving chassis conveyor was not in constant motion, only operating to release a chassis when required.⁹⁵ The Morris Commercial Cars factory in Birmingham was, like its parent Cowley factory, given a mechanised chassis line in the mid-1930s, replacing 2 earlier unmechanised lines. This line took chassis for vehicles of 15cwt to 3 ton capacity, while those for larger goods vehicles and passenger models were built on separate (probably unmechanised) lines.⁹⁷

Fridenson cites a number of strikes in French car factories in the 1920s against the introduction of moving assembly lines. There do not appear to have been any in the British factories, despite Jefferys's comment that "methods such as the assembly line were regarded with suspicion and vigorously opposed by the workers".⁹⁸ There was no particular reason why there should have been strikes, given the payment by results systems in operation; though strikes were just as likely over piecework rates.

Bodymaking

The major change in bodymaking in the 1920s was not the assembly line, but the increased use of specialised woodworking machinery coupled with the

extension of the "jig" system for putting the various wooden components together. Sunbeam had apparently used jigs before 1914, in line with their advanced techniques of chassis production, but they continued to employ skilled labour on them. (Austin also claimed to have brought jigs in by 1914, though the NUVB disputed this.) Wolseley introduced them in 1919, retaining skilled labour for a period; but when Austin brought them in extensively at the same time, they used semi-skilled labour,⁹⁹ which the union saw as a major threat (see chapter 7).

Once again, Ford had pointed the way to the future with their widespread use of non-skilled labour before the war. As early as 1915, all wooden components in Ford's Manchester plant were machine cut to jigs or templates, and in their assembly, machine screwdrivers were used wherever possible. The "Automobile Engineer" believed that "the cult of the individual is far too strong in England to make it worth while a manufacturer laying out extremely expensive plant for repetition work". But where large numbers of standard bodies were produced, "there is much to be said in favour of the use of jigs and fixtures in connection with bodywork". At Ford, most of these had been made of hard wood, and "in no case do they approach in cost the jigs and fixtures that have to be employed in automobile engineering".¹⁰⁰

The use of jigs, therefore, depended on the scale of production of each body. In the early 1920s, when car firms were producing a variety of different bodies and were unclear about the size of the potential market, then some models would be built up directly on a trestle. One NUVB member remembers doing this at Daimler, working in pairs, the senior man doing the

nearside (which was more valuable) and the junior the offside. As small batches were often executed by coachbuilding firms, the latter would be even more likely to employ this technique on more of their work, and for a longer period. Another NUVB member remembered building from the trestle at the Coventry coachbuilders Charlesworth in about 1925. He read the drawing, then marked everything out on a sheet of ply, like a datum board; for all subsequent bodies of the same type, he had all the measurements and markings. He also worked in a pair, working on the front of the body while his "mate" built the rear. In 1926, he was working in the same manner at the Coventry coachbuilder, Hancock & Warman.

It is not clear in these cases how much handwork was still involved, and where the division lay between the woodcutting machinist and the bodymaker, in shaping and preparing the wooden members. In the Daimler case, the bodymaker did the job right from the "plank"; and the Charlesworth example suggests a similar practice.¹⁰¹ Another example from Coventry in the 1920s notes "the men would collect wood from the stores on a Monday morning and it had to be cut, shaped and assembled into the frame for a car by the following Saturday morning".¹⁰²

In the late 1920s at Hoopers, a "high-class" London firm specialising in individual coachwork, patterns would be cut in a light wood, such as pine, and their form traced on planks of ash, which were then roughly cut to the desired shape. Woodworking machines would then be used to do the necessary shaping, boxing, boring, mortising, slotting, etc. The body framework would then be built up.¹⁰³ This situation continued in coachbuilding firms for individual body orders throughout the inter-war period. At Salmons of

Newport Pagnell in the 1930s, there was some wood mill equipment in one of the body shops which was used for the shaping of body members for individual bodywork orders. The centre of the shop was occupied by several full-sized drawing-boards, arranged opposite the bays in which the individual bodies were built up.¹⁰⁴

In the special body shop for small orders at Hoyal of Weybridge, components were produced by the direct application of the templates to the wood stock. The men worked in pairs, each man responsible for some sub-assembly work, while both did the final assembly. When only one body was required, the components and sub-assemblies were checked against the full-sized drawing.¹⁰⁵ This method was used for commercial and public service vehicle bodies, by such coachbuilders as Hoyal, and Vickers of Crayford, the end product being largely a result of "individual skill and effort".¹⁰⁶

Almost all car firms adopted the jig system for some of their models in the early 1920s. Arrol-Johnston, Belsize, AC, and Crossley were among the smaller manufacturers using them, AC producing about 50 cars per week, and the others probably less.¹⁰⁷ In AC's case, excess material was quickly removed after fixing together, eliminating the need for preliminary shaping of the wooden components; and this system was still in operation at the end of the 1920s.¹⁰⁸ A similar procedure was being used at Jowett in 1930.¹⁰⁹ However, Crossley's output of car bodies was sufficiently varied for one observer to note in 1930 that "despite a well-equipped wood mill ... the main characteristic of handwork prevails".¹¹⁰

As the market expanded, and the size of orders for coachbuilders increased, then they too built and used jigs for the bigger orders. When Hoyal and Vickers executed large contracts, a complete body was built; once approved, it was dismantled and special forming jigs and templates were manufactured from the actual components for use in the wood mill. Jigs and fixtures required for the assembly stage were also built.¹¹¹ One NUVB member working at Armstrong-Siddeley in the mid-1920s, was "loaned" out to Holbrook Bodies, who were taking on Armstrong-Siddeley work, and worked on jiggging up for what he called "repetition production". Another worked at Cross & Ellis and Midland Light Bodies in 1927-28 where they were operating "semi-mass production".¹¹²

Under a jig system, a much lower level of skill was required. Thus at Standard Motors, the main bodybuilding jig was arranged in such a way that it was impossible to set any wooden member in the wrong position. 12 bodies a day were being erected on this in 1923.¹¹³ It was claimed at Crossley that "semi-skilled operators can frame up an entire body with the assistance of a screw-driver and glue pot only".¹¹⁴ At Daracq in London, the main object was "to reduce handwork to a minimum" and thus the assembly of the body units did "not entail the employment of skilled labour".¹¹⁵

One consequence was that "lads" often did this work, rather than semi-skilled male labour. This was a problem for the NUVB in Coventry, for example, right through the 1920s. "Boys" working on jigs in the Standard body shop were only earning 3d per hour in 1921.¹¹⁶ The worst problem was at Hollick & Pratt (Morris Bodies) in the summer of 1924, when more than 40 boys and youths were engaged, or transferred from the body shop, and put

into the jig-body shop; more jigs were being constructed, and none of the 150 men discharged from the body shop at the time were given the opportunity to work on these jigs.¹¹⁷ "Lads" were also recalled assembling on jigs at Swift in the late 1920s before the firm closed.¹¹⁸

When the Swallow coachbuilding works moved to Coventry from Blackpool in late 1928, the owner, William Lyons, wanted to quickly raise the weekly output from 12 to 50 bodies. In his words, "We knew we could only do this by adopting a new method of coachbuilt construction ... Whereas in Blackpool each bodymaker had been responsible for the complete framing-up of the body, the latest method used for volume production was the machining of the wooden parts in specially constructed jigs, so that they could be assembled rather like a jigsaw puzzle. This saved a tremendous amount of labour, but the introduction of the method caused us many headaches. In fact, we were in such trouble at one time that the bodymakers approached me en bloc and told me that the whole thing was too complicated and doomed to failure, and that we should resort to the old method. We persevered, knowing that the economies could be very considerable, and before Christmas we had achieved our 50 bodies a week." Just over two years later, two "lads" were working at each of 4 erecting jigs. The machined pieces of wood were glued and screwed together to form the body frame in just over an hour, eight "lads" erecting over 30 saloon body frames a day.¹¹⁹

Given the complex shape and the size of some bodies, jigs were often used to build sub-assemblies, which were put together in a stationary main jig. Sub-assembly jigs were also introduced when the volume of output of particular bodies grew beyond a certain size. The Morris body shops at

Cowley and Coventry, Austin, and Singer were all definitely using them by the mid-1920s,¹²² and probably a lot earlier. At Humber the jig system did not work very satisfactorily to begin with, in 1919, and jig-built doors were offered to bodymakers to use free of charge on any job. By 1928, simple jigs were used for building sub-assemblies which were all inspected before being assembled into the complete body frame. Some nine years later, the smaller Humber Vogue and Snipe saloon bodies were built up from sub-assemblies such as sills, rear framework, quarters, roof, scuttle, cant rails, doors and sub-dash, in a main jig. (Interestingly, even then, the coachwork for the large Humber Pullman limousine and landaulette was still not done in this manner, considerably more handwork being entailed.)¹²³

Normally only 2 men (or "lads") would work on a body frame at a time, and given the relatively small size of many car bodies in the 1920s, there was not a great deal of room for more than two. But where the scale of production and the particular operation warranted it, several men could work together; thus, five operators assembled the wooden roof frame for a Singer body in the late 1920s.¹²⁴ The skilled bodymaker, however, did not disappear when jigs were used. Someone had to make the prototype bodies and wooden jigs, and each season usually saw new bodies introduced. Some men could be on jigmaking full time; for example, two NUVB members in the mid-1930s had been employed as jigmakers at Carbodies for eight years.¹²⁰ And at Humber, the NUVB secured an undertaking that "any mounting and fixing of special wooden parts to [any] jigs calling for accuracy and skill" should be done by "skilled coachmakers".¹²¹ Further, while car doors would be made in jigs, "hanging" them required experience; and fixing the metal panels would also generally be skilled bodymakers' work.

Body Assembly Lines

Because of the variety of body types available, along with different types of construction often being used in the same factory, there was little sense in investing in moving assembly lines for body erection until a company had decided its long-term model policy. Morris Motors at Cowley, for example, built its own composite saloon bodies, while its Coventry factory built open tourer bodies, and Pressed Steel later supplied its requirements of all-steel bodies. During the late 1920s and early 1930s, Morris produced many new models, and the number of bodywork options expanded rapidly. Thus, despite its extensive use of outside suppliers, Morris also had "several" lines for bodybuilding at Cowley, which it made little sense to mechanise.¹²⁵

Vauxhall also experienced problems in bodybuilding in 1933 when its production expanded consequent on the introduction of the new Light Six car: "In the body-building department production is made a little more difficult by the different types of bodies that are being produced. Not only are there alternative bodies available for the new passenger models, but there are, of course, several van and truck bodies in the commercial vehicle class". The similarly-bodied Vauxhall Cadet car was still in production, and later that year the company also produced a new large car, the Big Six, with its own range of coachwork.¹²⁶

"Composite" body erection can be divided into two stages - firstly the erection of the wooden frame, and secondly the panelling and door hanging operations.¹²⁷ Panelling was normally secured by "pins" in the 1920s; but,

in the early 1930s, forms of "composite" construction were developed where the wooden framing provided less and less of the body's structural strength. Pressed steel panels, welded together in different ways, increasingly took over this function. Whether or not moving line systems were introduced for the panelling operation depended on the exact method of construction, but the larger employers invariably brought them in for the subsequent operations of door-hanging, and lead loading and levelling off the surface of any pin fixings or welding. When Standard introduced power driven conveyors in the summer of 1931, it included one for body erection. It is not clear whether panels were fixed on this line, but oral evidence suggests that doors were hung on a moving conveyor.¹²⁹

Ford bodies built by Briggs in the early 1930s were built up from a series of pressed steel sub-assemblies with their own wooden framing (see chapter 6). The main frame sub-assembly was panelled, then the front and rear end sub-assemblies riveted and spot welded in place on the chassis frame by 6 men. Different main jigs were used for the four chassis types, the body then being put on a conveyor for finishing.¹²⁹ The bodybuilding section of the Morris factory at Cowley was reorganised in 1934 to bring the works "into line with modern ideas of body construction to produce steel bodies". As at Briggs, the bodies were built up and panelled before being put on conveyors. Their system of construction was different, however, as the wooden sub-assemblies were screwed and bolted together in a "skeleton structure", then moved forward "on a cradle into another skeleton jig, in which the steel panelling is secured to the wooden framing". Only then did the body go on a conveyor where the panel joints were electrically welded, the doors hung and fitted, and the body inspected.¹³⁰

Apparently, the main assembly jigs for this type of composite bodywork were "invariably made of wood", and were not complex structures. Wolseley were unusual in building a "very elaborate" assembly jig constructed mainly of steel when producing a new composite-bodied model in 1939. Sub-assembled timber frames were inserted into the various portions of the metal bodywork; the whole assembly was then accurately positioned, the panel joints were gas welded, and the body then moved along a track for door hanging and loading of the welded joints.¹³¹

Some factories did have moving panel assembly lines. Singer bodies were coachbuilt in situ with aluminium panels until the mid-1930s when steel panels were added to a wooden framing and welded together on a moving assembly line. (When Singer introduced a Roadster model in the late 1930s, its coachbuilt body of ash and aluminium was again assembled away from the track system.)¹³² At Humber, by 1937, the wooden body frame was placed on a rigid steel frame on a mechanically operated track, where the steel panels were pinned, and a small amount of spot welding carried out. The bodies were then transferred to another track, and the boot lids hung, door clearances adjusted, and the pin fixings lead loaded. The Hillman body lines, apart from the Minx which was built at Pressed Steel, were also conveyerised.¹³³

It was the coming of the pressed steel body that made body assembly lines more feasible, though initially, much work was still done before the body was strong enough to be let loose on a moving track. Even in the massive River Rouge plant of Ford in Detroit in 1930, "Jigs known as body bucks are situated at the commencement of conveyors, the purpose being to

locate and hold all important dimensions while riveting and welding are completed to a point at which it is safe to send the skeleton body along the conveyors for completion."¹³⁴ At Ford's Manchester factory in 1929, the steel panels for the Model A Tudor saloon were welded together in a steel jig to produce a shell complete with dash and scuttle, after which the body shell was put on to a conveyor.¹³⁵

It is not clear at what stage the all-steel bodies produced at Pressed Steel started to be built up on conveyors. Probably the early to mid-1930s, as it was only then that they were produced in any volume. In the mid-1930s the Morris 8, the new Hillman Minx, and the Flying Standards (see chapter 6), were all produced in sufficient numbers to make this worthwhile. One former worker says the Morris 8 (produced from the end of 1934) was built on a conveyor, he himself working on the side-panel line.¹³⁶

The introduction of unitary construction techniques at the end of the 1930s increased the scope for body assembly lines. The Vauxhall Ten-Four body was built up in three sub-assemblies - rear end, including roof and side panels, front end, and underbody. At each principal stage in the production of these, fixtures were provided, where two to four or more operators would be involved in spot welding. These main sub-assemblies were then located in a master jig, temporarily secured by tack-welding, and then put on a short "merry-go-round" for the final spot welding. The bodies were then transferred to three "fettling and finishing" lines where door hanging was also carried out. Just over half the operators were on line work, with "specially trained operators" employed on the "skilled operation" of door hanging, which took up "a considerable length of the line".¹³⁷

At Pressed Steel, the unitary-constructed Morris Ten had its side panels built up on their own oval-shaped conveyor. "A generous provision of locating pins, fixtures and clamps on the conveyor trucks" enabled the body to be spot welded together on the moving conveyor, without the intervention of a stationary main assembly jig. On the same conveyor, the doors were hung, and then final "straightening" and finishing operations performed.¹³³ As with door hanging, many of the finishing operations on all-steel bodies could not be significantly broken down - a metal finisher at the Briggs Highland Park plant in Detroit in 1932 remembers having to finish the roof rail on one side of every tenth body.¹³⁴

Paint Shop Conveyors

The major change in interwar practice in the paint shops was the introduction of cellulose, which is dealt with in detail in chapter 6. Written and pictorial evidence of paint shops suggests that certainly after the introduction of cellulose, the preparation of the bodies before spraying was done with the bodies on movable trolleys. Whether or not these were attached to conveyors, all plants¹⁴⁰ seemed to have had a moving conveyor to take the bodies through the drying ovens, as the length of time spent in them was critical.

The other paint shop operations were usually the last major line process to be conveyorised. Austin brought in extensive mechanisation in the paint shops in 1932, and estimated that these new tracks would save the company on average 35 shillings per body in labour and materials.¹⁴¹ The 1934 chassis reorganisation at Morris also brought in four separate conveyorised

paint lines.¹⁴² During 1935, Standard brought in a new continuous track, where bodies travelled over half a mile.¹⁴³ And by 1936, if not before, the Humber-Hillman paint shops were completely conveyerised.¹⁴⁴

Trim Shop Practice

The traditional practice in trimming had been that the body would be trimmed by one man, most of the work being built up directly in the body. The first major change in trimming came when the scale of production justified dividing trimmers into two groups - those who made up trimming items at the bench, and those who fitted them in the body, occurring before the first world war in some factories.

Cutting out the material had traditionally been a hand job, with some skill necessary to leave the minimum of waste. A number of railway works established the principle of cutting out material to patterns or templates,¹⁴⁵ in some instances these also marked the exact positions for the buttons;¹⁴⁶ while electrically operated cutters were sometimes used, the one at Wolverton in 1897, for example, being capable of cutting 10 thicknesses of material at a time.¹⁴⁷ Templates and electric cutters were then brought in to the car industry. In Ford's Manchester plant, 25 thicknesses could be done at a time in 1915.¹⁴⁸

Another time and skill-saving innovation was the introduction of cushion presses, which compressed the horsehair filling as well as buttoning the cushion to hold it together, though this still left the lengthy process of finishing off and then attaching the spring-case. Similar machines were

already being used for seat-cushions and "squabs" (back-cushions) at Daimlers by 1912, if not before, and two men produced enough for the 75 trimmers employed in the factory.¹⁴⁹ Fords at Manchester had them by 1915, following practice in the Detroit factory,¹⁵⁰ and they were noted at Rover and Wolseley before the war, and even in the small Arrol-Johnston factory during the war and in the early 1920s.¹⁵¹ As one inter-war coachbuilding manual put it: "This method of constructing a cushion or squab is, of course, only suitable for large quantities of exactly the same pattern, but, if these conditions are present, then the labour cost of making up a large cushion is only a matter of a few pence".¹⁵² While it is an important issue, it has not been possible to discover the extent of the use of these machines. They were in use for "buttoned" trimming at Vickers in 1924, and at Rover in 1926.¹⁵³ But oral evidence suggests they were not generally used even by large firms in the inter-war period, as "buttoning" was little used in mass production shops after the early 1920s.¹⁵⁴

Ford's Detroit factory, producing on a massive scale even in 1915, had installed chain conveyors in place of benches, the cushion conveyor having a capacity of 134 per hour, while 120 back cushions could be made every hour on another conveyor.¹⁵⁵ The Manchester factory, with a much lower production, merely assembled the cushions "progressively", eleven men producing 93 a day.¹⁵⁶ Fairly quickly after the first world war, British firms engaging in mass production (which, at that stage, only meant a few thousand cars a year - ie around 100 a week), subdivided the trimming operations so that all the work was made up on the bench. One former NUVB member claimed that Austin was the first Midlands firm to do this.¹⁵⁷ However, the practice became fairly common in the early 1920s, even among

London coachbuilding firms.¹⁵⁹ But an NUVB member at Charlesworth remembered men having to trim a whole body, and that when he was trim shop foreman, less than one man in six applying could be started because of the high level of skill required.¹⁶⁰

Body trimming, the fixing of the trimmings in the body, was a time-consuming process, even in "mass production" shops. In Ford's Detroit factory, despite the already extensive mechanisation in 1915, the side paddings were still being stuffed with horsehair directly in the car, on a moving line; the "burlap" (ie canvas) interior was then sewn in place, further stuffing added to form a roll at the top, and the leather then tacked in place. Though, being Ford, this work on the line was subdivided. Interestingly, at this stage, the "top" and curtains had to be built on to each Model T Ford, being individually fitted rather than pre-assembled.¹⁶⁰ Similarly, at Austin, the only trimming that was not prepared on the bench was the "head" leather for the landaulette body.¹⁶¹

In British factories, the squabs and elbow pieces were traditionally tacked on to special "trimming rails", and these, in turn, had to be covered up by the use of metal beading.¹⁶² Later, squabs would be more quickly fitted using metal fastenings, so that they could be easily removed, and the rear seat cushion would rest in the seat well without any attachment. Practices varied, and door pads, attached by spring clips at Morris Bodies in Coventry, were screwed into place at Cowley.¹⁶³

Most bodies in the early 1920s were "open", and the trend away from open bodies in the 1920s was accompanied by complex moving "heads" (ie hoods) in

the more expensive cars; while the increasing numbers of "closed" bodies brought with them the "headlining".¹⁶⁴ The attachment of this was by far the most complicated piece of body trimming, requiring the use of adhesives as well as tacks.¹⁶⁵ One attempt to circumvent the difficulties was made when the all-steel Morris Oxford, made at Pressed Steel in the late 1920s, had its roof painted and trimmed separately before being screwed on to the body in the Morris factory.¹⁶⁶

Also, separate front seats (usually known as "bucket" seats) became nearly universal in Britain, unlike the United States where the "one-piece" front seat continued.¹⁶⁷ This entailed the new process of seat-building, similar to, but more skilled than, squab and cushion-making. It appears that at Morris Motors at Cowley and Morris Bodies in Coventry, individual trimmers would still make up seats complete in the early 1930's; though by the late 1930's in the Coventry factory a "preparatory gang" would cover the spring cases with hessian, felt roll and hair or fibre mat, before passing the work on to skilled trimmers in the "cushion gang" and "squab gang", who would finish the work with leather or rexine.¹⁶⁸ Seat-building conveyors were feasible, and one was brought in at Singer in 1938.¹⁶⁹

However, technical developments very quickly became available that would eventually undermine the trimmer's newly acquired seat-building skills. In the early 1930s, spring cases and padding started giving way to various pneumatic or cellular rubber fillings, especially in smaller bodies needing lower seats. In particular, "Dunlopillo" cushions came on to the market in 1931.¹⁷⁰ It is difficult to assess how much of the market they took in the 1930s, but seat construction was made much easier - "the trimming of these

seats is simple, as it consists of an envelope of leather which is fixed over the seat".¹⁷¹ But the main move away from horsehair to latex-type padding was probably an early post-second world war development.

While apprenticeships were very rare in trimming, many boys learnt the trade by going into trim shops straight after leaving school. Of course, the expertise gained depended entirely on how many different jobs the boy was allowed to do during these years. This might well depend on the boy's father having influence with the foreman, for example. However, during the inter-war years, it appeared to be in most car manufacturers' interest that there should be a supply of all-round competent trimmers, even if their skills were not adequate for the more specialist coachbuilding firms.

A Morris worker at Cowley remembers that boys would begin by creasing the rexine after it had been cut out into seat shapes. Female sewing machinists would then machine down these creases, to produce "flutes". Stuffing the flutes with wadding, using a special implement, was the job done by the next age-group of boys in the trim shop. At age 18, they would start making up door pads - a shaped piece of plywood with a layer of wadding, covered with rexine, and usually with a door pocket (which also had to be trimmed) attached. Finally they went on to seat making.¹⁷²

At Morris Bodies in Coventry, the progression would start in the cutting room, where the boy would become familiar with the various trimming materials - canvas, hessian, horsehair, felts, and rexines and leathers. He might then work on sticking canvas on the various trimming rails. A spell on trimming sunshine roofs would then precede the final move into trimming

squabs, cushions, and bucket seats. Practice varied widely between factories. While boys spent a long time creasing and stuffing flutes at Cowley, this job was done by female sewing machinists at Morris's Coventry factory, and also at Standard.¹⁷³

Two other major changes occurred which speeded up the trimming process during these years. One was the replacement of the traditional trimmer's hammer by a magnetic hammer in many mass production shops by the early 1930s, if not before, (which one former trimmer reckoned halved the time spent on hammering tacks).¹⁷⁴ The other was the introduction of all-steel bodies, with no internal wooden fillets to attach trimming rails; and this necessitated the development of simpler methods of attachment.¹⁷⁵ During the inter-war period, trimming moved a long way from Automobile Engineer's somewhat sneering description in 1915 of "the trimmer with his tacks and irons, needles and scissors, buttons etc, and all the obscure impedimenta of a peculiar handicraft".¹⁷⁶ But in 1939, the trimming process in the car factories still retained an important core of handwork skills.

Trim and Finishing Lines

The body trimming operations (prior to mounting on the chassis) and body finishing (after mounting) were more amenable than body erection to moving line production. How this actually operated varied from plant to plant. Arrol-Johnston had a primitive conveyor track for body trimming and finishing in the early 1920s, on which bodies were pushed forward after each operation, but, because of the relatively low scale of production, there were very long work-cycles for the operators.¹⁷⁷ Stationary line

systems were also noted in the mid-1920s at Austin and Morris; one Morris worker, starting in 1927, remembers fitting door pads on a trim line, and working five or six cars up the line at a time.¹⁷⁹ As finishing dealt with the body already mounted on the chassis, it can be surmised that flow production here was relatively easy as the car could be propelled forward on its own wheels while the final operations were completed. Jowett, for example, producing less than 100 cars per week in the mid-1930s, used "modified line methods", to not only finish but also trim the body (of which there were 6 different types) after it had been mounted on the wheeled chassis.¹⁷⁹ Many coachbuilders adopted similar practices, Salmons of Newport Pagnell facilitating the movement of bodies from one shop to another, by mounting the body frame on the supplied chassis before panelling, painting, trimming and finishing.¹⁸⁰

In the mid-1920s Morris used separate shops for mounting and finishing closed and open bodies. But, with the addition of the new all-steel Morris Oxford (built, painted and trimmed at Pressed Steel from 1927-28), which would require different techniques, and the new Morris Minor launched in 1928 (with the open tourer version already painted and trimmed in Coventry), "an extensive rearrangement ... [was] ... carried out to enable all classes of chassis and body to be dealt with on different lines without undue handling". Consequently the body trimming and finishing lines were chain-propelled from about the summer of 1928. Six separate lines were noted in 1934, probably dating from this 1928 reorganisation,¹⁸¹ which has been obscured by the later mechanisation of the chassis tracks.

It seems likely that Austin, engaged on a much more thorough reorganisation of his factory, mechanised the trimming and finishing tracks at the same time as the chassis lines, in 1928. The Austin body trimming lines were noted in 1934 as being 290ft long, and moving at 2ft per minute.¹⁸² Standard followed suit, bringing in a single mechanised trim line and a body mounting and finishing line simultaneously with their chassis track in 1931.¹⁸³ During 1936 Standard went even further and introduced moving assembly lines into the newly expanded Final Finish Department, where the cars were carefully inspected, faults rectified, and minor painting and finishing operations performed.¹⁸⁴

Humber had four separate tracks for trimming operations on car bodies, while vans were also trimmed in the same shop. Although body panelling and painting operations were conveyorised, it is not clear that trimming was.¹⁸⁵ But, in any event, given the relatively low volume of Humber production, and the fragmentation of trimming work, there must have been fairly long work cycles in this area; and it is interesting to note that in the late 1930s the NUVB's only real area of strength at Humber was in the trim shop (see chapter 8). Singer, with a much lower overall volume than the Big Six, had to wait until 1938 for the paint shop, the trim shops, body mounting, and final finishing to be conveyorised, with all models going down the one line in these shops.¹⁸⁶

Use of power tools

While moving assembly lines increased the intensity of work, the use of power tools further reinforced this. But the latter's introduction tended

to wait until the former (except in the case of paint spraying equipment), even though the capital outlay necessary was generally low. Not surprisingly Ford's Manchester plant were in the forefront; on the main body-building conveyors, in the mid-1920s, "the use of hand drills and screwdrivers has been entirely eliminated, the shop....equipped.....with pneumatic drills, screwdrivers and speed wrenches".¹⁸⁷ But visitors to the Cowley works of Morris in 1924 were surprised at the extent to which hand tools such as hand drills and screwdrivers were used (though pump screwdrivers were used on the trim line in 1927), and the little use made of electrically driven or compressed air tools. And in 1929 in the factory's bodybuilding shops there was an "almost complete absence of power-driven tools", which could have been used in drilling, screwdriving, turning over the edges of panels, driving nails, etc.¹⁸⁸

At Austin, however, there were air lines in every shop in the late 1920s,¹⁸⁹ and when the Standard works were completely reorganised in 1931, and power driven conveyors installed, "wherever possible, power-driven equipment superseded the old-fashioned spanner, drill or screwdriver". Such power tools were suspended above the employees' work "so that there is no time lost in picking them up". According to Captain John Black, the General Manager, "as we reduced time [to build a car] so we had to reduce physical energy".¹⁹⁰ Power-driven tools were installed at Singer's Birmingham factory, Singer being reputed by one contemporary source to be "definitely the first" to equip their workmen with electrically operated spanners.¹⁹¹

The time saving involved, with little capital outlay, was also attractive to coachbuilders. By 1930, the Hoyal bodybuilding works at

Weybridge made extensive use of electric drills and screwdrivers in its body shop devoted to large contracts.¹⁹² Salmons of Newport Pagnell, with an output of 50 bodies a week in the mid-1930s, plus its conversions of other manufacturers' standard saloons to transformable bodies with folding-head bodywork, were using air lines for pneumatic drills, sanders, and other tools in its body shops.¹⁹³

Conclusion

Assembly lines expressed the increasing division of labour that had come about because of the growth of output from individual factories. They were the logical application of flow production principles to assembly, rather than fitting, processes; and were therefore inappropriate for certain aspects of motor car production. Mechanisation of the lines did not alter these basic points. The main advantage to the employer of moving lines was, assuming the necessary infrastructure, a tremendous saving in material handling. Under a payment by results system (as in all car factories except Ford), the worker was tied to the group, rather than to the line.

It was almost impossible to break down a number of jobs beyond a certain point, and this gave some groups a strategic position in the production process, irrespective of whether or not they worked on assembly lines. A number of bodymaking and trimming jobs came in this category; far from being marginalised by mass production, if the NUVB were organised, their members had great power.

PART 2. RAILWAYS

A. RATIONALISATION AND EMPLOYMENT

The Railways Act of 1921 amalgamated nearly all the railway companies into 4 big groupings. "The scheme of grouping was designed to produce geographically compact systems which would eliminate as far as possible conflict between the groups". But "the amalgamations were not scientifically planned on a geographical basis since one of the principal objectives was to leave the old companies intact".¹⁹⁴ Consequently, the territories covered overlapped to some extent.

The LMS resulted from 35 former companies, the LNER and GWR from 33 each, and the Southern Railway from 19.¹⁹⁵ This massive reorganisation, effective from the beginning of 1923, had a number of implications for NUVB its members. Most of the larger amalgamating companies had sizeable workshop facilities, with some building new stock, while all had engaged in repair work. With the grouping, new construction was concentrated on certain sites, with specialisation where possible; other shops were designated for repair work only, again with some specialisation.

The least affected grouping was the GWR, dominated by its previous namesake company, the Swindon works being virtually the only manufacturing site in the new group. Repair work continued at shops such as Worcester, Oswestry, Cardiff/Caerphilly, Newton Abbot and Bridgwater.¹⁹⁶ The Southern Railway inherited the workshops at Eastleigh, Ashford, and Brighton and

Lancing, and from 1925 to 1928 concentrated all carriage construction at Eastleigh, transferring some men from Lancing, which was confined to repair work on central section stock. In the process a number of NUVB members lost their jobs. In 1930, further rationalisation led to Ashford concentrating on locomotives and wagons, with Lancing doing repairs to all Southern Railway steam and electric bogie carriage stock. This meant a transfer of some 150 men, mainly NUR members, from Ashford to Lancing.¹⁹⁷

The LMS was probably the most affected group, as the 8 major constituent companies each had their own carriage and wagon works. On the LNWR, the L&Y, and the Midland alone, the dimensions of passenger carrying vehicles varied from under 40ft. long by 8ft. wide to over 65ft. long by 9ft. wide. In the majority of cases the component parts were not interchangeable. The LMS rapidly instituted a policy of having new stock built to 4 standard lengths only.¹⁹⁸ New carriages and wagons were to be built at 4 works - Earlestown building wooden framed mineral wagons; Wolverton 1st and 3rd class carriage stock, and, a new departure for this previously exclusively carriage works, all covered wagon stock; Derby high class carriage stock - dining, restaurant and sleeping cars, and corridor stock - plus special wagon stock; and Newton Heath compartment carriages and steel frame merchandise wagons. The workshop building a particular type of vehicle also supplied the components for maintenance and repairs to the other workshops and out-station shops.¹⁹⁹

The Scottish factories of St. Rollox, Barassie, and Inverness were reorganised for dealing with heavy repairs, and the other workshops dealt with ordinary repairs. In 1929 it was decided that Barassie should

concentrate on wagon repairs, and St. Rollox on carriage repairs.²⁰⁰ But more drastic rationalisation took place. In 1927 the Stoke locomotive, carriage, and wagon works was closed, and its workforce transferred to Crewe, 15 miles away, and Derby, 36 miles away.²⁰¹ The Crewe carriage department was then closed in the early 1930s, and the workforce transferred to other centres.²⁰²

Other small carriage works closed down were Inverness, Barrow, and Tilbury, with men moved, in some cases from Tilbury to Glasgow,²⁰³ but by far the most serious closure was of the whole Newton Heath carriage and wagon works in 1932. The increased productivity of the other 3 main works, and the drop in traffic in the early 1930s were given as the reasons.²⁰⁴ Newton Heath normally employed about 4,000, but this had been reduced prior to closure to 1,500. Of these, 800 were to be transferred, and the rest discharged. 600 NUVB members were involved, with a number going to Derby and Wolverton, and a few to Horwich for running repairs to electric trains in the district, but the majority were discharged.²⁰⁵

The fourth railway company, the LNER, also inherited a large number of workshops, the main carriage shops being at York, Doncaster, Stratford, Dukinfield and Cowlairs. The smaller Inverurie works stopped building carriages in 1923, as did Cowlairs. At Stratford, no new passenger-carrying vehicles were built after 1927, and the last new vans were built in 1929, the works being re-equipped in 1931 as a major repair centre. Dukinfield carried on building until 1939, but was re-equipped after 1928 for the progressive repair of coaches. York and Doncaster became the two main carriage-building works for the LNER.²⁰⁶

While the LMS seems to have experienced the greatest upheaval, the inter-war period saw regular short-time working and dismissals at most of the major shops around the country. While Floyd could report that the railway shops in his organising district were taking on additional men, as well as giving new work out to contractors late in 1923, a few months later the LMS shops started short-time which lasted much of 1924. St. Rollox was noted as being back on a short week, with Saturdays off, in mid-1925. And, after the General Strike, many shopmen returned to face a 4 day week.²⁰⁷ Again, early in 1928 the LMS group experienced suspensions and dismissals at all centres, in particular those with the most advanced production methods. Wolverton was noted as one suffering particularly severely from dismissals at that time, though most of those dismissed got fixed up elsewhere, many quite possibly going to the Oxford car factories.²⁰⁸

A return to full-time working early in 1930 in many of the major centres was quickly followed by renewed short-time.²⁰⁹ One continuing complaint was that while the craft unions preferred short-time to dismissals, because of the strain of unemployment benefit on their funds, the NUR was in favour of the opposite, and this prevented a united front being presented to the respective managements.²¹⁰ One result was that at York, which reputedly had the largest NUR shopmen's branch, there were some 400 dismissed from the carriage and wagon works in mid-1930.²¹¹ Substantial dismissals also occurred at St. Rollox and Dukinfield in 1932, though from mid-1933 onwards, the various workshops started taking men on again, and by early 1934 Derby, Doncaster, Dukinfield and York had practically absorbed all those NUVB branches' unemployed members, York branch even having to apply to Head Office to secure more men for the carriage works.²¹²

Despite these difficulties, the railway shops continued to employ several thousand NUVB members. Apart from the big carriage workshops, members were employed as painters in the locomotive workshops, including those without attached carriage workshops, or only small carriage departments, such as at Crewe,²¹³ Gorton, and Horwich. And there were hundreds of small workshops and out-stations. In London for example, there were small main line workshops at Willesden, Neasden, Plaistow, and Bow, depots like Clapham Junction, New Cross Gate, and Wimbledon,²¹⁴ as well as the underground railways' workshops. Across the country, outside the bigger towns, there were a variety of places members might be employed in very small numbers, though some of them were rationalised during the inter-war years. Examples are Warrington, the workshop of the former Cheshire Lines Railway, Birkenhead of the old Wirral Railway, and Melton Constable, where the union had a branch in the 1920's.²¹⁵

The Railway Contract Shops

The inter-war history of the contract shops is one of rationalisation due to depressed demand. Once again, as in 1902, this centred around a merger involving the Metropolitan company. However, prior to the big amalgamation of 1927, there had already been some merger activity. Leeds Forge, which had moved into the rolling stock industry in 1887, making underframes initially before building a separate carriage works in 1908, took over the Bristol Wagon & Carriage Company in 1920 and closed it down in 1923.²¹⁶ Cammell Laird, which only started building rolling stock in a Nottingham factory after the first world war, took control of the Midland Railway Carriage & Wagon Company in 1919 and Leeds Forge in 1923.

In 1927, the Cammell Laird and Metropolitan groups merged their rolling stock activities to close redundant capacity, and from 1929 the new group was known as the Metropolitan-Cammell Carriage, Wagon & Finance Company (Metro-Cammell, for short).²¹⁷ A substantial closure programme then took place. The first casualties were survivors from the 1902 amalgamation, with the Ashbury works at Openshaw closing about 1928, and the Oldbury works stopping building rolling stock in 1929; Leeds Forge was then closed in 1930, and Cammell Laird in 1931.²¹⁸

This left Metro-Cammell with its Saltley works, along with the nearby Washwood Heath works of its subsidiary, the Midland Railway Carriage & Wagon Company, and the steelworks of another subsidiary, Patent Shaft & Axeltree company, which made occasional rolling stock at its Old Park, Wednesbury works.²¹⁹ A number of independents survived, such as the Birmingham Railway Carriage & Wagon Company of Handsworth, the Gloucester Railway Carriage & Wagon Company, Cravens of Sheffield, as well as the Scottish firms of Hurst Nelson, and R.Y. Pickering. Most of these firms were also involved in tram and/or bus building.

The rationalisation in the industry had, however, confirmed Birmingham as the centre of the railway carriage contract industry, compensating for that city's lack of railway company workshop employment. But the contract shops' employment was, by nature, related to manufacturing orders, with men being laid off when contracts were completed. This became particularly grave in the early 1930s when all of the centres suffered, with its related effects on NUVB branch organisation in Saltley, Handsworth, Gloucester, and Motherwell (see chapter 7).

Trade Union Organisation

Trade union organisation in the railway workshops was bedevilled by the rivalry between the various craft unions and the NUR. It is difficult, however, to quantify whether this resulted in a lower or a higher level of trade union membership and organisation. In those carriage shops, where the UKSC had established itself before the expansion of the GRWU in 1910, the NUVB maintained a high level of organisation; elsewhere its membership was usually relatively low, and the NUR correspondingly high.

The NUVB's main strongholds in the 1920s were at Swindon and Wolverton, and the Manchester shops of Newton Heath, Dukinfield, and Gorton. During that decade a number of organising campaigns were held, often in conjunction with other unions. Following the implementation of the grouping at the beginning of 1923, the union was involved with the Federation of Engineering & Shipbuilding Trades in a series of organising meetings in Scotland, where it was reported that the NUR were very firmly entrenched in the north of Scotland workshops.²²⁰ Organisers Floyd and Halliwell then addressed many organising meetings in English railway centres that summer,²²¹ before separate conferences were held of NUVB branch representatives from the four groupings in the autumn. As well as dealing with the various grading issues (of work and towns), these meetings also considered the level of organisation. The LNER conference called for an intensive organising campaign, as did the LMS, which highlighted "the badly organised districts", while the Southern group wanted an immediate campaign in Ashford.²²²

Following this, meetings were held in Derby, Ashford, and also in Brighton, where it was noted that, while most workers were in trade unions, the organisation was not very good.²²³ In comparison, the craft unions at Gorton and Dukinfield were reputed to be 100% organised.²²⁴ But in the next few years, much attention was focussed by all unions on reaching an agreement with the four railway companies on negotiating machinery at national and local level, and settling their own differences through a "Membership Agreement". Agreement with the railway companies in 1927 included the constitution of shop and works committees to take up cases on behalf of individuals or groups of employees. It was estimated that if the agreement was followed to the letter, the LMS would have 25 Works Committees and 237 Shop Committees.²²⁵

The "Membership Agreement" resulted from recommendations made by a sub-committee of the TUC General Council early in 1925. The initial proposals made clear that no union member could join another union without proper inquiry, but gave freedom of choice to non-unionist craftsmen to join the union of their choice. The AEU and the Boilermakers objected to this, believing that the NUR should be prohibited from recruiting skilled men. NUVB Assistant General Secretary Compton argued "while we are quarelling the horse is starving". He thought that a suggested scheme for the unification of trade benefit subscriptions might solve "the vexed question of membership". "A few craftsmen conscientiously believe in 'industrial unionism', but the majority of those in the ranks of the NUR are there because the contribution is less than that paid to the craft union".²²⁶

A year later, no progress had been made on this particular clause, but further consideration soon led to agreement that non-unionist craftsmen would first be approached by the union "catering for their occupation". It was also agreed that all unions should make efforts toward the "elimination of non-unionists". Joint Committees were to be set up to supervise these arrangements, and the NUR accepted the NUVB's interpretation of the clause that any non-unionist coachmaker having a grievance against the NUVB or wishing to join "an Industrial Union", would have his case referred to the Works Joint Committee. If they were satisfied, then he could join the other union.²²⁷

Membership committees ceased to operate after a few years because of continuing inter-union difficulties,²²⁸ but NUR records show that many functioned in the first few years. At Ashford, on the Southern Railway, the committee was still functioning in 1929 when it was estimated that 1,420 were in various unions out of about 2,000 employed. While the NUVB were represented, their local branch membership still remained below 100. Some departments in the Brighton works were 99% organised; at the associated Lancing works, the NUR had about 400 members, while the craft unions had less than 100 between them (the NUVB only having "a few"). A joint committee between the two works had led to recruitment at Brighton, but little progress at Lancing.

In 1929, it was estimated that at Cowlairst some 75% of the 2,400 workers were in unions, and 80% at St. Rollox. At the latter, the NUVB had representation on the Membership Agreement Committee from the trim shop and carriage shop (both along with the NUR) and the paint shop (with the NUR,

NAFTA, and the Scottish Painters). The NUVB were much weaker at Cowlairst with representation only from the carriage shop (with the NUR), while the NUR represented the trim shop, and the paint shop (with the Scottish Painters).²²⁹ This tallies with earlier NUVB reports that their organisation at St. Rollox was in a strong position.²³⁰

At Swindon, the joint committee held a campaign in late 1927 to recruit non-unionists, with dinner-hour meetings at the various entrances over a fourteen day period.²³¹ However, it was suggested by an NUR member that there were still about 3,000 non-members there out of 13,000 employed in 1930. The TGWU, which brought in 7 organisers for an organising campaign in Swindon in February 1930, suggested that the number of unionists was more like 3,000.²³² Wolverton received the attention of a fortnight's organising campaign run by the local trades council in the summer of 1929,²³³ while a few months later, the Newton Heath works (where there was no membership committee, and all trade unions were losing members²³⁴) was one of the targets of a trade union week in Manchester.²³⁵

The NUVB in practice confined itself to recruiting craftsmen in its traditional crafts; with a strong presence at the big carriage works at Swindon (GWR), Wolverton and Newton Heath (LMS), and Dukinfield (LNER). At York and Doncaster (LNER) and Derby (LMS), the NUR were dominant, while at Eastleigh (SR) and Stratford (LNER) the indications are that the NUVB had a reasonable level of membership in the relevant departments. At the other shops, membership likewise varied from fairly high, as at the St. Rollox repair shops to very low, as at the Lancing repair shops. The main problem for the union was not that the NUR recruited unskilled and semi-skilled

employees, but that they had made great inroads among the skilled workers by the time of the 1926 Membership Agreement. This was a problem for all craft unions, but the NUVB were affected more than most. Their potential membership in the railway workshops was a higher proportion of their existing overall membership than was the case for unions like the AEU and Boilermakers, which also had significant railway membership.

In the contract shops, NUVB membership was high, for a variety of factors. Most of the shops had been operating for a long time, and their need to recruit a skilled labour force at short notice when embarking upon contracts, often meant a relationship with the local UKSC/NUVB branch. In addition, these shops usually also built trams (especially in the 1920s) and buses (usually in the 1930s), and were subject to fair wage clauses imposed by local corporations. At the beginning of 1925, Cravens' membership was reported as "something like 100%", and the Gloucester Railway Carriage & Wagon Company were 100%.²³⁶ During a strike at Brush in late 1924 when about 250 members were out, it was reported after four weeks that it had "not been found necessary to have pickets".²³⁷ Organisation in the Birmingham contract shops was reported as 100% in 1927, but, of course, this had to be maintained. A few months later at the Metropolitan works in Saltley, a number of meetings were held to tighten up organisation, and several members heavily in arrears paid off their debts, while a number of others rejoined. But a few refused, and a mass meeting decided that after a certain date they would not work with non-unionists. When the day came, the men in question had joined up, and the manager "expressed his pleasure that no stoppage had taken place as the firm were very busy".²³⁸

B. DEVELOPMENTS IN RAILWAY CARRIAGE BUILDING PRACTICE

Substantial changes took place in the methods of building and repairing railway carriages in the railway company shops during the inter-war period. While the changes varied from company to company, and works to works, it was a period in which certainly as far as carriage body-building was concerned, there was a significantly increased division of labour.

Railway carriage building had already progressed far from its early beginnings, one important nineteenth century development being the machining of the wooden components. It was claimed, at the Cowlairs works in the late 1860s, that every piece of wood in the building of a carriage was fashioned according to a standard pattern, being "planed, moulded, mortised, tenoned, and bored by machines". The workmen reputedly needed "little skill" as "they have scarcely to make a single measurement or calculation, but simply to mark the wood according to the [standard] patterns and place it on the machines". But there was still little division of labour in actual carriage erection, as "generally two or four work together and contract to build a carriage or wagon for a certain sum."²³⁹ This relatively simple division of labour was in line with the practice in locomotive erection.²⁴⁰ However, compared to the days before extensive woodworking machinery, it might appear, as it did to a Swindon foreman some twenty years later, that "a man only wants a hammer and a glue-pot to build a railway carriage nowadays."²⁴¹

The Derby works of the new LMS group saw the first major change in carriage building practice. By the end of 1922 these works were re-equipped and reorganised. Two main factors were involved - accurate machining of component parts to produce interchangeability, and "unit assembly". The old practice of leaving tenons "on the full side" to ensure that they were big enough for the mortice hole, leaving the workman to make the necessary adjustments was abandoned. The objections to this new practice was that the timber would shrink or swell, and that it was impossible to assemble the parts without hand fitting.²⁴² When the NUVB executive went round the works in September 1923 they raised this but were told that that well seasoned timber showed very little shrinking after machining. In fact the NUVB visitors saw ninety mortices on the roof register with ninety tenons on the side framing with only one joint requiring a little manual adjustment.

Before the adoption of the new system at Derby a skilled coach bodymaker would mark out every piece of timber used in a carriage. Now, only one of each part needed to be marked out.²⁴³ As, however, a very large proportion of the cost of machinery was the time involved in setting up the machines, components were re-designed to allow for large batches of standard parts.

"Unit assembly" was a method where instead of building carriages as in the past "by assembling them in the same way as houses....ie on one spot", the construction was divided into several units which were assembled separately such as roofs, ends, and doors.²⁴⁴ Doors, for example, were assembled by dropping the components parts into a localising jig, using compressed air cylinders to squeeze them together, and a screw driving machine to force the screws in.

By the NUVB executive visit, the building time of a carriage body had been reduced from 6 weeks to 6 days. This included the bodymakers taking eight hours to put the floor boards on the carriage underframe and screw them down, followed by an erection gang taking 75 minutes to finish erecting the framework of the coach.²⁴⁵ Visitors in 1927 reported that the actual erection time on the underframe was as quick as 22 minutes,²⁴⁶ while by 1930 the floor was taking a little over 5 hours, out of a total erection time of the whole carriage of six hours.²⁴⁷ Although the erection had been speeded up, the carriage body still needed to be panelled and internally fitted out. Partition frames, sliding doors, and door lights were put together in cramps, and screw driving machines used wherever practicable. By 1927, a system of progressive assembly had also been introduced, with nineteen positions for erection, finishing, and painting. All vehicles were moved to the next position according to a strict timetable.²⁴⁸

Similar unit assembly techniques were developed in the 1920s at the LMS carriage works at Newton Heath. The use of compressed air for driving home the tenons, and pneumatic screw-driving machines, showed that the Derby principles were being implemented. Such techniques were also later introduced at the LMS Wolverton carriage works;²⁴⁹ it is not clear whether progressive assembly of carriages had been introduced here, but Wolverton (in common with Earlestown) had installed a system of progressive construction of new wagons.²⁵⁰

Major changes also took place in the LNER carriage building shops during the inter-war period, with the York works at the forefront. Until 1926 each gang in the York building shop would work on a single vehicle, assembling

all the woodwork and carrying out all the fitting. After reorganisation, sectionalised construction was introduced and separate gangs were allocated to particular tasks. Different gangs put together doors, partitions, body ends, quarters (ie body sides), floors, seat frames, and seat-frame backs. The erecting gang would then erect them on the coach underframe.

The time taken to build a 60ft corridor coach from the laying of the floor on the underframe to the body leaving the building shop was reduced by this method from 5½ weeks to 2½ weeks. Time was saved in a variety of ways. Investment in extensive woodworking machinery meant that instead of every piece of wood being marked out by hand, only one of each part was marked out to form a template for the rest. The hundreds of screws for the floor boards were screwed down by high-speed turbine air drills, instead of by hand. The old method of "cramping" work together by hand was abandoned and powerful cramps worked by compressed air were used for forcing the tenons into the mortices on the various sub-assemblies, while the erection of the ends and the quarters on the underframe was achieved by lifting them into position by overhead crane and then pulling home the tenons on to their shoulders by means of simple racks and levers operated by hand. In the cabinet shop, door lights and photograph frames were assembled in jigs and cramped together by compressed air. Hand-sanding, to make the wooden components ready for varnishing, was eliminated by means of several belt-driven sanding machines and a three-drum sander. The latter was used for panels, corridor sliding doors, and even body door light frames which were put through the sander complete with the glass in position.

The erecting gang would fix the ends, quarters, and partitions to the floor, panel up the ends, board the roof, and panel and hang the doors.²⁵¹ One erecting gang was assigned to each coach, and several coaches would be built at any one time. But this entailed all the component parts having to be transferred to the various erecting gangs; temporary scaffolding having to be set up for every roof that was made; and the coach then having to go to the cabinet shop, the brake shop, and the plumbing shop before it was ready for the paint shop.

In order to economise both time and labour, a further reorganisation took place at York in 1931. The "Progressive System of Building" was introduced, whereby the principle of "Sectional Building" already in operation was extended to the work of assembling the body, building the roof, and hanging the doors. Instead of having several erecting gangs each building a separate body, there were now several gangs each performing the same specific operation on each body. The building operation was spread over 7 stages - dictated by the length of the building road.

The steel underframes were lifted on to the road with their own bogies, so that the coaches could be moved forward on their own wheels, at regular intervals of time. At the first stage, the floor was laid down, with the workmen standing on platforms situated at a convenient working height. At the second, the body ends and quarters were erected, the ends having already been panelled and moulded. The quarters were secured in position to the floors by wrought iron "knees", cantrails placed in position on top of the quarters, and the compartment partitions fixed. The erectors then fixed and moulded the body side bottom quarter panels, which had been left out to

enable the wrought iron knees to be secured. And while the erectors were engaged on this assembly work, the cabinet-men (ie finishers) were busy fixing the corridor plinths, boarding up the corridor, and hanging the gangway vestibule doors.

The roof irons and oak ribs were fixed on to the body cantrails at the third stage. The roof was then boarded and fixed to the ribs, before, on the outside, being painted, stopped with putty, and made ready for covering. At the same time, the inside ribs and packings for the ceilings and roof fittings were fixed to the roof, and fitters fixed the supporting irons and roof tanks for the lavatory water supply. At stage four, a thick coat of jointing paste was applied to the outside of the roof, before a canvas was tightly stretched and nailed down to the cantrails. A second coat of paste was then applied; when this had dried, various roof fittings were then fixed on. Meanwhile, pre-panelled and glazed corridor screens were fixed inside, electricians put the lighting wires in, and then the compartment and corridor ceilings, and partition panels above the luggage racks, were put up.

At the next stage, a gang of erectors hung the outside doors, which were already fully assembled. In the interior further work was done on the corridors; and the lavatory plumbing was fixed. Underneath, in a full-length pit, the steam-heater fitters worked on the heating, and electricians did further wiring work. At stage 6, the exterior was varnished, the component parts already having received 2 coats. In the interior various fittings were added. At stage 7 the exterior varnishing

continued, while the heating and plumbing were tested inside. The coach was now ready to go to the paint shop for the final varnish coat.²⁵²

While there is little information on practice at the LNER's Doncaster works, Dukinfield were building carriages on a progressive basis by 1929, the coach being built at four different work stations.²⁵³ By contrast, at the GWR works in Swindon, there was "no dramatic replanning of the works in the interests of mass production", merely a number of small improvements which facilitated a steady increase in output.²⁵⁴

At Swindon, the full machining of wood did not even take place until 1936, when the company bought in a machine to deal with all the operations necessary on the long "bottomsides" - the timber upon which the framework of the coach was actually built up. These timbers were 57ft long, made with one or two splices. The purpose-built machine had a 48ft long cast-iron bed, but with sets of rollers at each end, took up 190ft, and was known as "The Loch Ness Monster". Before its advent, the bottomsides were marked off by hand, and taken to various machines, in turn, to be sawn, tenoned, mortised, bored, recessed, grooved, etc. Not only did this mean a great deal of handling, but even then the timbers were only partially finished, as the existing machines were incapable of doing all the required work. Consequently a large amount of handwork was still necessary.²⁵⁵

On the Southern Railway, the Eastleigh works, had introduced "mass production" methods by 1925, with union complaints of work being timed.²⁵⁶ Coach bodies were erected on the underframe in six stages. While sides, ends, doors, corridor and compartment partitions were all previously

assembled in jigs, roofs were built directly on to the coach, as at York, though Derby's were jig-built.²⁵⁷ At the Lancing repair works, it was the practice until the late 1920s for gangs to carry out the whole of the work pertaining to their trade on a vehicle. When progressive repairs were introduced, "men are kept constantly employed on one class of work at one particular place". A red light would go up when the time allowance was up, and the job would pass on to the next work station. This system reduced the time occupied in the general overhaul of a carriage from 52 to 28 days.²⁵⁸

"Progressive" repairs were also introduced in the LMS and LNER shops. Newton Heath, on the LMS, appear to have been the first to have brought this in, by at least 1927.²⁵⁹ An early description of the system found that it worked according to a number of definite principles. "The transporting of the material stripped from the coaches is done by labourers, thus enabling the skilled artisan to remain at his allotted position". The man-handling of new materials was eliminated as far as possible, with the supply of materials anticipated. Men were allocated to specified operations, which were done at given positions, with the job moving to the man and not vice versa. The first operation had to balance with the last, with the carriage bodies moving after definite intervals of time. The system also required a constant supply of carriages for repair, as well as work being carried out in comfortable positions.²⁶⁰

By 1930 the LMS carriage repair shops at St. Rollox had bodies on their own bogies moving up the shop, "the bogey being attached to a slow moving chain travelling along the floor between the rails".²⁶¹ About the same time a system of progressive repair was instituted at the Stratford works of the

LNER, the bodies being moved at regular intervals (movements taking place after working hours).²⁵² At the Dukinfield LNER works, the carriage repair shop work was divided into six distinct stages (each accommodating two vehicles), with a definite number of men allocated to each. By proportioning the number of men employed to the repairs required at each stage, it was found possible to get the necessary work completed on time. At the first stage, compartments were stripped and washed throughout, the outside body paintwork being burned off or washed down as required. All loose fittings such as seats and drop lights were also removed for necessary cleaning and repairs. The second and third stages were devoted to outside body repairs and general renovation of interiors. The fourth stage was mainly roof repairs and painting, high movable trestles being provided. At the fifth stage, the interiors were varnished in readiness for fitting up, while the outsides were varnished or painted and filled according to type of coach. The final stage saw the refitting of the interiors.²⁵³

The NUVB journal reported a similar system of repairs being introduced at the LNER Cowlairs works in 1935, referring to it variously as the "belt system", the "chain system", and the "Chain Progress System".²⁵⁴ These systems produced a massive saving of time, and no doubt, to a lesser extent, also of labour. At Stratford it was calculated that the percentage of coaching stock under, and awaiting, repairs had been reduced to less than half the old figure,²⁵⁵ while at Dukinfield, carriage repair output was up 42 %, the average time that vehicles were out of traffic duty being down to 37% of the previous figure.²⁵⁶

Although all these developments significantly changed previous practice in the railway workshops, the sectionalisation of labour was on nothing like the scale that occurred in the car factories. Apart from the limited scale of production, another reason was that while the 4 railway companies introduced standardisation into their building of new stock, by far the greatest activity in the workshops was repair work. With a heritage of different types of vehicle from all the amalgamating companies, let alone the variations within each of these, the repair work was multi-faceted. Bodymakers and finishers, in particular, even if confined to a smaller area of work, still needed to have wide all-round skills.

Information is less easily available on the railway contract shops, but as they were almost entirely manufacturing enterprises, with few repair contracts, they would be expected to have the most up-to-date production facilities. For example, it was reported in 1927 of the Metropolitan company's Saltley works that "to meet world-wide competition, the works have concentrated on speed of production".²⁶⁷ In line with this was the company's policy of sub-contracting much trimming and finishing work to furnishing and upholstery companies, as well as the more long-established practice of sub-contracting cushion work to female homeworkers.²⁶⁸

However, because the contract shops had to produce to specifications drawn up by railway companies around the world, they were not necessarily able to reap total economies of scale, because of varying designs. But their development of all-steel carriages enabled inroads to be made into skilled labour. As with wooden-framed carriages, there were two basic methods of assembly - direct erection on the underframe, and unit assembly

in jigs. The Birmingham Railway Carriage & Wagon Company favoured the former method, as different jigs were required for each individual contract, and the cost of making them was prohibitive if only a small number of carriages of one type was built. This company, along with the Metropolitan, as will be discussed in chapter 6, employed a special class of semi-skilled steel coachbuilders on all-steel carriages.

Cammell Laird, which favoured the jig method, was also able to reduce the proportion of skilled workers used. Not only could steel parts "be machined on an interchangeable basis with a cheaper form of labour than is employed for woodwork", but the riveting of panels was done by one man operating a pneumatic riveting hammer with a youth "holding up" on the underside, and a boy heating the rivets. The panels were riveted in jigs, and the erection of the whole coach was a very simple operation, taking sometimes as little as three hours.²⁵⁹

The inter-war period witnessed great changes in railway carriage building and repair. The railway company workshops, however, were still basically repair factories, and the workforce needed a number of all-round skills. However, there was a definite and irreversible increase in the division of labour, caused by the adoption of flow production principles. The workshops stood somewhere between the extremes of the high volume car producer and the "one-off" coachbuilder. To the extent that the latter was now in long-term decline, the old hierarchy in the union, where the "private" coachmaker was a more skilled worker than his railway counterpart, was to some extent reversed.

PART 3. BUSES AND TRAMS

A. BUS AND COACH BUILDERS

London Coachbuilders

There were bus building firms in all parts of the country, including most railway and tram contract shops. But the building of buses, and saloon coaches, was a highly seasonal industry, with inevitable consequences for union organisation. The experience of London coach and bus builders highlights many of the problems the union faced nationally.

The workforce at Hall Lewis, where charabancs formed a high proportion of the business, would be expanded considerably between Christmas and Easter. But as soon as orders were completed for the summer season, layoffs started, "often at a moment's notice". Most of the labour force would be paid off from Whitsun until Christmas, though "rushed jobs resulted in sacked staff being re-engaged only to be sacked once more".²⁷⁰ In the early 1930s, after Park Royal had taken over the firm, short time was rife: "Rush orders would be taken and, particularly in the case of overseas orders, round-the-clock working would replace short time to meet deadlines for shipping."²⁷¹

Duple of Hendon was another firm experiencing extreme seasonality for its main product - luxury coaches. "The effect of this was to create enormous demands on the workforce up to Easter each year, whereupon the

workload would tail off dramatically." This inevitably led to lay-offs, with a high proportion of the workforce laid off until orders built up again in the autumn, when shift work was necessary. Though as the firm, which had started up in 1919, expanded, it got a series of large contracts for the GPO which gave it some work in the off-season.²⁷²

In 1929, London-based NUVB Assistant General Secretary Halliwell reported "the boom season in bus building has ended, most of the contract shops in the district that have been so exceptionally busy, completed their orders in early August. Three shops alone stood off several hundred, breaking up the little organisation that we had been able, after much effort, to build up."²⁷³

Strachans, in North Acton, had been blacked in 1919. When they stood a chance of an order for Manchester double-deck buses in 1929, Floyd, the Manchester-based northern organiser, also being a local councillor, opposed it. The firm agreed to conform to national agreement rates (see below for comments on the fair wage clause), though they did not join the NFVT until 1934.²⁷⁴ This opened the shop to NUVB members, and within a few months the union was making good progress in organising the shop. A Works Committee was set up, along with representatives of other unions. But at Whitsun 1930 about 150 men of all grades were discharged, London organiser, Penn, musing that it meant "when they get busy again starting all over afresh". Almost simultaneously, about the same number were dismissed in another shop, and Halliwell pointed out "the tendency now is to crowd all this class of work into three or four months of the year, working at high speed with excessive overtime".²⁷⁵

The union's general weakness in these shops was illustrated by a dispute at Duple in February 1930. Owing to the dismissal of several members of the shop committee, the union contacted the firm asking for recognition of the committee under the union's agreement with the NFVT. The agreement, however, merely stated that employers "may" recognise such committees. Other actions by the manager led to 80 NUVB members at a lunch hour meeting being ordered off the premises. The firm later stated that they would only take one third of the men back, and all employees were to apply for their jobs. Although the union's London District Committee supported the demand that all be taken back, intervention by the NFVT led to NUVB General Secretary Nicholson conceding that the management were in the right concerning shop committees, and pickets were withdrawn.²⁷⁶

In late 1930, Halliwell reported that the union had endeavoured "in the few bus shops that show signs of life to see that none other than members secure employment, and with some success". Strachans, for one, had been taking on labour, but shortage of material prevented them from getting into full swing.²⁷⁷ But, once again, firms that had a push on before the 1931 Whitsun holidays to get coaches built, considerably reduced their staff immediately after; "now an annual event in the trade".²⁷⁸ In 1932 "the road passenger section of the trade had only a short run this year, as usual Whitsuntide saw the end of it". Penn argued "quite a number of the commercial shops three months ago were in full swing, working not only full time but some overtime; this is a condition which we should all try and avoid, as I am afraid we are getting to the stage now where our members will be in work for 3 months and out for 9 months, therefore draining the

funds of our own Society". In October that year Halliwell reported the saloon coach and omnibus sections of the trade as "being quite dead".²⁷⁹

1933 was no different - "Whitsuntide reveals the usual crack-up, especially in the saloon coach section".²⁸⁰ In 1934 "there has been more activity on the commercial side of the trade, but not such that we experienced 2 or 3 years ago. There is bound soon to be further development on this side of the industry. The Bill that is now promoted to replace tramcars by trolley buses in various parts of London is certain to cause many orders to be placed".²⁸¹

The supply of buses to the LGOC, which built many of its own buses, and other London bus operators was an important source of trade for the London bus builders. In the late 1920s, Hoyal of Weybridge, and Vickers of Crayford were among the minor suppliers of bodywork for the smaller operators, but Vickers stopped building bus bodies in 1929,²⁸² and Hoyal went out of business in 1931.²⁸³ The formation of London Transport in 1933 then totally destroyed the market among independent London bus operators that had been largely shared by Dodsons of Willesden, which went out of business, and Birch Bros of Kentish Town, which henceforth built only for its own fleet. Short Bros of Rochester, another supplier, reverted to flying boat manufacture, while several other small firms disappeared.²⁸⁴

The Fair Wage Clause

Although a few municipal corporations built their own buses, most supplies came from outside contractors, and NUVB officials used the fair

wage clause to try to enforce union rates among them. Innumerable cases of this are recorded in the NUVB Journal, especially in the 1930s, affecting builders of commercial or public service vehicles. Local councils, corporation bus and tram departments, as well as government departments, such as the War Office and the Post Office, were the affected customers; and, similarly, local cooperative societies would also respect this clause when brought to their attention. Those companies specialising in bus production could be brought into line with national agreements, if only temporarily.

For example, in 1931, Guy Motors of Wolverhampton were forced to pay minimum piecework earnings on a bus contract for Wolverhampton Corporation;²⁹⁵ the next year, Weymanns of Weybridge, a new firm in the industry, agreed to pay overtime rates when necessary;²⁹⁶ and Shorts of Rochester was brought temporarily on to national agreement rates in 1931 over a bus contract for Birmingham Corporation, and in 1934 over an order for coaches for the Royal Arsenal Cooperative Society.²⁹⁷ Even EEF-member firms could be brought to heel; thus when Ransomes, Sims, & Jefferies of Ipswich, an agricultural machinery maker, started building buses, they paid the rate specified in the EEF woodworkers' agreement for agricultural implement making. As this was lower than for coach and motor body work, an NUVB EC officer, who was also a Lincoln councillor, opposed a contract for them to build buses for Lincoln until the matter was righted.²⁹⁸

B. PROVINCIAL BUS OPERATORS

In the inter-war period there were four distinct groups of bus operators - the municipal authorities, the "associated" companies, the railway companies, and the independents. The municipal authorities were slow to introduce motor buses, mainly because they had invested heavily in tramways, and, before 1930, they each needed a special Act of Parliament to grant them the necessary powers. The 18 municipalities operating such services had, however, increased to 90 by 1928. The size of the bus fleets was relatively large, averaging 53.9 vehicles in 1931,²⁸⁹ Birmingham Corporation, for example, running 612 buses in 1936.²⁹⁰ These fleets had to be maintained, but only some half a dozen authorities also built their own buses, as their Acts did not contain the clause "but shall not manufacture".²⁹¹ Manchester was one of those that built its own bus bodies, at its Hyde Road depot where trams were also built, but it is not clear how many were made, and after 1936 these were purchased from outside manufacturers who could mass produce them more cheaply.²⁹²

The "associated" companies were controlled by a number of big holding companies, of which the most important were British Electric Traction, Thomas Tilling, and Scottish Motor Traction. These three companies had extensive interests in about 50 of the largest bus operators in the mid-1930s, and, excluding London Transport, they eventually controlled about 40% of all buses operated, and 50-60% of all bus journeys. Nearly all of the "associated" companies owned over one hundred vehicles, with Midland Red (part of the BET group) alone possessing 1,224 vehicles in 1938.²⁹³ This company, whose official name was the Birmingham & Midland Motor

Omnibus Company, built almost all its own vehicles from 1924 onwards, its Central Works at Carlyle Road employing over 700 workers on major overhauls and vehicle production in 1954.²⁹⁴ One problem unions faced here was that each new employee had to sign an undertaking that all questions between the firm and its employees had to be settled without a third party (ie union officials) being brought in.²⁹⁵

Scotland's bus services were dominated by the SMT Company, which acquired a substantial number of smaller firms in the decade from the late 1920s onward. Most of Scotland was covered by its various operating companies. The parent company was based in Edinburgh and operated in the south east of Scotland. "Western SMT" was the name given to the Scottish General Transport Company of Kilmarnock in 1932 following its acquisition; merged with some existing SMT services, this group operated in the south west of Scotland. The Western SMT also ran buses on behalf of the Corporations of Ayr and Kilmarnock. "Central SMT" also came into being in 1932, covering the Lanarkshire and Dunbartonshire areas. The other main subsidiary was W. Alexander, which was acquired in 1929, becoming the SMT's operating company for north east and mid-Scotland (including operating bus services on behalf of Perth Corporation).²⁹⁶

The initial result of this take-over activity was that by mid-1932, the SMT were operating, according to the NUVB, some 95% of Scottish public service vehicles, excluding Corporation buses.²⁹⁷ The SMT group had become the largest employer of vehicle building labour in Scotland,²⁹⁸ and, consequently, the NUVB's relationship with it was critical. Early advantages and disadvantages accrued from the take-over activity.

Initially, the Scottish General, with workshops in Stirling, absorbed by the Falkirk-based Alexanders in 1930, was brought onto a 47 hour week from their existing 52½ hours, and some progress was made in unionisation, which had previously proved very difficult.²⁹⁹ But problems continued over Alexanders' interpretation of the Scottish coach trade agreement, especially at their Falkirk workshops.³⁰⁰

A rationalisation and centralisation of workshop capacity took place in two of the areas. In the Western SMT area, employees from the Midland Bus Services workshops at Aidrie were transferred to Kilmarnock. While the latter was fully unionised, the former appears to have been very weak, and the management had not recognised the Scottish coach trade agreement, the net result being to undermine the organisation at Kilmarnock. The "Central SMT" firm of Stewart & MacDonald, with workshops at Carluke (south east of Motherwell) had also traditionally refused to operate the Scottish agreement, but with the employees transferred to the former Lanarkshire Traction Company workshops in Motherwell, union rates were generally enforced.³⁰¹

While some progress was made in unionising the Motherwell and Kilmarnock workshops, this was counterbalanced by the alleged victimisation of shop stewards at both shops, without any resistance.³⁰² Eventually, the union, having failed to persuade the Central SMT to observe their agreement in full, reported them to the Traffic Commissioners under clause 93 of the 1930 Road Traffic Act. The Fair Wage Clause in this Act proved of great value, and the company conceded most of the points before a hearing took place in June 1933.³⁰³ However, this was not without its drawbacks. Because

of its sheer size as a bus operator, the SMT's purchasing decisions for new vehicles had substantial implications. With Scottish vehicle building firms paying a higher wage rate than in England, the SMT companies (apart from Alexanders which had its own bus-building shop in Stirling, producing an average of 160 single-deckers a year from 1932 to 1940³⁰⁴) ordered very little from Scottish firms in 1932, and practically nothing in 1933; the Scottish NUVB organiser called it "an organised and calculated boycott".³⁰⁵

While the parent SMT Company, based in Edinburgh, seems to have been a member (and, not surprisingly, the dominant one) of the Scottish employers' association, the SNVBA, the subsidiaries appear not to have been. The parent company threatened that unless the clauses (dating from 1924) in the Scottish agreement, giving full time officials access to members and non-members during working hours, were removed, there might not be a future Scottish agreement. Their position soon mellowed slightly, and NUVB relations with the Central SMT improved, while permission was given for a lunch-time meeting at the Western SMT Kilmarnock workshops.³⁰⁶ But the boycott of local bus-builders continued, with an order for 180 double-deckers placed with Leyland at the end of 1934, and a reiteration of the need for wages to come down to the Leyland level. However, the union interviewed the Commissioner for the newly-designated "Distressed Area" of the West of Scotland, which led to an SMT order for 200 buses from Scottish firms.³⁰⁷

This appears to have been the turning-point in relations with the company, and was consolidated by a successful 3-week strike at the Central SMT Motherwell workshops early in 1935, winning recognition of the union,

and the right of bodymakers to repair metal bodies. However, a non-union block remained at Motherwell;³⁰⁹ and at the Kirkcaldy and Falkirk workshops of Alexanders, the majority were non-unionists.³⁰⁹

While the Scottish experience was extreme, it showed the power of the large private bus operating groups. Apart from the municipal corporations and the "associated companies", the other groups of bus operators were the independents (or "pirates"), with the majority owning 5 vehicles or less, and the railway companies. Before their amalgamation into four groups in 1923, most railway companies ran bus services, usually as feeder services to railway stations. The GWR, for example, had 300 vehicles by 1928; but after this date, when they were granted general powers to enter road transport, the railway companies mainly invested in the larger "associated companies".³¹⁰

Corporation bus workshops were not usually particularly big employers of NUVB members, but the union could usually persuade them to follow the coach trade agreement, a task which was much harder with the privately-owned operators. Not only reliant on corporations applying the fair wage clause to their bus suppliers, the NUVB were also generally dependent on these public bodies to set standards in the bus-operating industry.

C. LONDON BUSES

The London General Omnibus Company dominated the operation of London buses until the creation of London Transport in 1933. From 1923 to 1932, this company operated between 4,000 and 5,000 buses, including those belonging to a number of companies who had agreed before the first world war to lease their bus fleets to the LGOC to operate. Thomas Tilling, which had made its own agreement with the LGOC in 1911-12 to limit its bus fleet to no more than 150 and to not compete directly, retained their independence. Otherwise, the post-war independents could only muster a few hundred buses in competition with the LGOC in the 1920s, which, after further take-overs, fell to about 200 in the five years prior to nationalisation.³¹¹ The history of London buses before 1933 is, therefore, largely a history of the LGOC.

Until 1921 the annual overhaul of LGOC buses was carried out at thirty different garages, while the renovation and repainting of bodies was undertaken at three separate coach factories - at the North Road, Holloway, coachbuilding factory, and the two subsidiary works at Olaf Street, Hammersmith, and Seagrave Road, Fulham. In 1921 a central overhaul works was opened at Chiswick, starting coachbuilding repairs in March, and engineering repairs in August. The body shop could hold 104 bodies at a time, and the paint shop 57. There seem to have been between 2,000 and 3,000 employees there in the early 1920s, divided roughly equally between the coachbuilding and engineering sides.³¹²

The LGOC bus fleet underwent great changes in the interwar years. In August 1919, the LGOC started running its new 46-seater K type buses, which eliminated the last remnant of horse-bus design, in particular the through longitudinal seat on the lower deck. In December 1920 the 54-seat S type went into service, and by mid-1922, half the LGOC fleet consisted of new post-war buses. However, even these still had open tops, and consequently no upholstery on the top deck. It was not until 1926 that the police gave the LGOC permission to convert its fleet of post-1922 NS buses to covered tops; though, because of its low platform, this was the only type so licensed. However, it was only another year before the larger double-deck buses could also sport covered tops.³¹³ With covered tops came upholstered seats on the upper deck, and more work for trimmers.³¹⁴

In 1925, the Metropolitan police at last permitted single-deck buses to use pneumatic instead of the traditional solid tyres, and this extended to double-deckers in 1927. No doubt the elimination of the "bone-shaker" helped reduce the amount of maintenance necessary, and hence the number of workers employed on repair. But the conversion of the existing fleets to covered tops, and the 1929 reform of allowing drivers to have windscreens in front of them, would have generated a lot of work.³¹⁵ As the historians of London Transport note, the technical improvements on London buses in the 1920s were piecemeal, and "the alteration of existing buses was an expensive and unsatisfactory procedure".³¹⁵

In 1929 all remaining K types were withdrawn, so that the LT bus (without an enclosed staircase) introduced in 1929, and the ST bus (with an enclosed staircase) introduced in 1930, provided the standard vehicles of

the LGOC fleet. Throughout the 1920s there had been several bus types in operation, and with over 200 buses acquired by takeovers of independent operators up to 1927, there was plenty of variation in the work at Chiswick.³¹⁷

The Chiswick works were slow in introducing metal construction, bringing in some metal-framed units in 1936, and producing 150 bodies in 1939-40 with flitched-timber pillars and steel box-section waist rail (see chapter 6). But these were the last bodies to be built at Chiswick, so the overhaul and repair shops dealt mainly with timber-framed bodies.³¹⁸ However, the sheer volume of overhaul work required some innovation, and in 1926 a conveyor belt system was introduced. As a result, the time for a complete body overhaul was reduced from 4-7 days to 8 hours, excluding painting.³¹⁹

Trade Union Organisation

When Chiswick opened, most of the employees were apparently non-unionists, but within two years the shop was reputedly 100%, and the management were advising new employees to join unions.³²⁰ In August 1922, the LGOC made three separate wage agreements with unions at the Chiswick works - one for skilled engineering staff (AEU, Sheet Metal Workers, ETU, and Associated Blacksmiths), one for semi-skilled and unskilled adult engineering grades (TGWU, National Union of General Workers, and Associated Blacksmiths), and one for skilled and semi-skilled coachmaking staff (NUVB, Woodcutting Machinists, and the Wheelwrights & Smiths). The London District Engineering Employers' Association, for one, protested at the high wage rates agreed, which, for most skilled coachmaking grades, would be, from

November 1922, 3d per hour higher than the district rate in the vehicle building industry.³²¹

In 1923 the union could claim that there were more than 1400 NUVB members at Chiswick, and only about two dozen non-members.³²² Late in 1924 the union forced the removal of a non-unionist, but soon afterwards, in December, there was a number of dismissals, and the proposed transfer of the shop secretary to a garage. A stoppage took place, and the dismissals became suspensions pending an inquiry by the union. The shop secretary was retained, a committeeman and two other prominent members restarted, but the union was forced to accept the other dismissals, mainly due to shortage of work. A pledge was given that 48 hours notice of dismissal would in future be given to committeemen.³²³

In November 1925 when some 12 members were dismissed at Chiswick, mainly on charges of restriction of output, the union's Assistant General Secretary advised a mass meeting to stay at work. In the next few days, the whole of the committee were closely watched, and then told they would not be allowed to function. A paint shop steward was also ordered to report to the chassis blacking section in the engineering department, thereby losing his right to represent the paint shop. A mass meeting agreed to strike, as the transfer broke the agreement of 48 hours notice of transfer of stewards, with the result the steward was restored to his own section. A joint hearing then investigated the charges against the 12, leading to the reemployment of some. In the next month there was a large number of dismissals.³²⁴

Meanwhile, in the LGOC garages, trade union organisation had also built up since the first war. By 1927 there were about 5,000 garage men on running repairs, of whom about 500 were in craft unions, including the NUVB. When in 1927, the garage workers asked for a similar wage increase to one given at Chiswick, the LGOC proposed a scheme that would displace approximately two-thirds of the garage bodymakers, and replace them with a new grade of "assistant-craftsman". These latter would be made up from the general hands in the garages, and the displaced bodymakers would be transferred to Chiswick.

As other unions conceded similar proposals, the NUVB had to give some ground. The final agreement in August 1927 was that no one was transferred, and the NUVB kept all its work, but while all the painters were put on the Chiswick rate, only one quarter of the bodymakers were, leaving about 90 on the old rate. The company claimed that this grading of labour would not be applied at Chiswick, and was only possible in the garages because of the increasing standardisation of the work. In 1930 there were still 70 craftsmen members on the lower rate, but the management agreed to uprate them by the end of that year.³²⁵

This 1927 agreement in the garages conceded the right of the union to supply all the necessary labour for the garages. Until the General Strike the procedure for engaging labour at Chiswick had been to inform the NUVB office when men were required. This practice fell away until in late 1929 NUVB officials saw the Chief Engineer, who gave an undertaking that the NUVB's London office would be informed in future, though he claimed that it

had still been policy to tell all new entrants that there were agreements with unions, and the management desired them to be union members.³²⁶

But the union could do very little about redundancy, and when an order for new double-deck buses was completed in August 1927, 90 men were stood off. With a new bus construction programme starting in mid-1930, a few members were placed at Chiswick, but in September 1931, with the near-completion of the programme, the management wanted to dismiss 120 NUVB members, but agreed to short-time working of a 42½ hour week (ie no Saturday) for a three month period.³²⁷ However, by mid-1932 there had been 200 discharges, and by the summer some 600 in total had been given notice. What exacerbated the employment situation was that on the repair side where buses had historically had to be overhauled and painted every 12 months, Scotland Yard ruled that, with improved vehicles, the LGOC only had to do this now every 18 months. While the Chief Engineer accepted a proposal for a 41½ hour week to save the last 250 from going, a majority of the members were against this, and the discharges went ahead.³²⁸

With the London Transport Bill, one of the main concerns of the union was that the newly-constituted London Passenger Transport Board should retain the power to manufacture its own bus bodies. The original clause gave the new Board full manufacturing rights, but this was altered to giving the Chiswick works the right to manufacture bus bodies, but no more in any one year than the annual average of 1926-30. As this did not take into account the big building programme in 1931, the NUVB successfully lobbied the Chiswick Conservative MP to get this amended to 1927-31, which gave an added 100 bodies per annum, bringing it up to an annual total of

527 bodies. While the NFVT, representing many bus-builders, were far from satisfied, they took pleasure from the fact that the figure was well below the Chiswick's capacity of 1,250.²²⁹

There was the inevitable rationalisation of facilities, but given the relative monopoly position of the LGOC in London bus services, the situation was probably not as bad as on the trams (see section D below). In late 1933 employees from Tillings were transferred to Chiswick, but got substantial wage rises into the bargain - from 1s6½d to 1s11d for craftsmen, and a rise for brush hands from 1s1d or 1s2d to 1s8d.²³⁰

Another source of recruitment into Chiswick was the former central overhaul depot of the London General Country Services at Reigate. When the Reigate works were enlarged in 1932 the NUVB started recruiting, and along with the AEU and ETU, attempted to establish an agreement. Initially there were problems with the TGWU which wanted to pursue independent negotiations, including fixing conditions for craftsmen, but Deakin gave the NUVB an assurance that they would not negotiate independently. In mid-1934 an agreement was reached with the LPTB, and in a supplementary agreement the union got inserted the clause "no assistant craftsmen trimmers or bodymakers". However, because in the body shop there were so many non-craftsmen, there was an arrangement to let a percentage continue for a period, with only craftsmen being recruited in the future.

As a number of the non-craftsmen were in the TGWU, it was agreed between the TGWU and the NUVB that the TGWU had an exclusive agreement covering garage employees, and in return they undertook not to recruit in

the coachbuilding section, and further informed their members there they had to join the NUVB.³³¹ Not long after 100% trade unionism had been obtained at Reigate, the decision was made to close the depot and transfer employees to Chiswick. Over 100 men moved in February 1935, and the rest in November. Craftsmen increased their hourly rate as a result from the recently negotiated 1s7d to 1s11d.³³²

Because of a building programme the transfers under the London Transport Act do not appear to have led to redundancies, and in mid-1935 there was even a demand from Chiswick for a large number of extra bodymakers. The STL double-deck bus first came into service in London in 1933, and by the time the last one was built in 1937, some 2,625 had been delivered. Bodies were built at Weymann, Park Royal (175 all-metal bodies) and at Chiswick itself, partly to find employment for ex-Tilling men there, according to Barker & Robbins.³³³ According to London organiser Penn, the various transfers of labour had the effect of putting new life into the union organisation at Chiswick. Later, in 1936, when more men were required, the LPTB gave the NUVB the opportunity of sending half the number. And in the autumn of 1938 the NUVB claimed it had a higher number of members at Chiswick than at any time since 1926.³³⁴ In 1949 there were still 1,200 NUVB members there out of a total workforce of more than 5,000.³³⁵

While there was periodic uncertainty of employment connected with the fluctuations of new building and conversion programmes, the LGOC and then the LPTB was generally an important source of stable NUVB employment in London during a period marked by major changes, not least among the traditional London coachbuilding firms.

D. TRAM OPERATORS

London Trams

London also had a huge system of publicly owned tramways. The fourteen undertakings operating in 1914 are shown below in table 5:7, with the LCC alone owning more than 60% of the tramcars in the capital. London did not participate in the decline of the tramway system general in Britain from the mid-1920s, and therefore the tramways played a bigger role in NUVB employment than in many other towns. Barker & Robbins suggest three reasons for the tram's longer survival in London. Firstly the trams disappeared from the smallest systems first, and the biggest systems last. Secondly, there was the "restricted streets" legislation of 1924 which prevented excessive numbers of buses from running on main highways. Lastly, the LCC, by far the biggest of the London tramway networks, did not have the power to run buses, unlike other municipal authorities which could, and usually did, change over.²³⁶ The result of this is that the number of tramcars operating in London roughly held up at its pre-first world war level until the mid-1930s when they started being rapidly replaced by trolleybuses (see table 5:8 below).

Each of the tramway operators had its own depots where repairs to rolling stock were effected. The largest was the Central Repair Depot of the LCC at Charlton, while the MET had sizeable works at Hendon. As well as routine maintenance and overhaul, the depots sometimes were engaged in updating the stock. The LCC's E1 cars downstairs had two rows of 16 seats

facing each other - "wooden benches which made the minimum necessary concession to the shape of the human sitting apparatus".³³⁷ Charlton rehabilitated these old E1 cars from 1926 onward, repainting them, and upholstering the wooden seats. 100 cars were converted in 1926/27, 250 in 1927/28, and 500 in 1928/29.³³⁸

An attempt was made at Charlton to speed up production by the introduction of a rope conveyor in 1928. This was installed initially in the under-frame section, and produced a surplus of labour. The NUVB believed it would be impracticable on the coach section, as there was a vast difference in the amount of work necessary between one tramcar body and another. But in 1929 it was attempted, though in the paint shop the results were worse than previous, and it had to be abandoned.³³⁹

Apart from the odd experimental car, the tram car works in London did not build their own stock, though the Union Construction & Finance Company at Feltham (an Underground subsidiary) built 100 all-metal cars in total for the MET and LUT which went into service in 1931.³⁴⁰ The level of employment at the depots therefore fluctuated with conversion programmes and the like, and its absolute minimum was dictated by the repair and repainting work necessary to meet Metropolitan Police scrutiny. This latter point was a bone of contention for the union, as it regularly complained about the standards. Commenting in early 1930 on the fact that the bodywork of many cars was a disgrace, and that the paintwork "has dropped to that point where it is neither useful nor artistic", Halliwell questioned how these tramcars passed the Scotland Yard test.³⁴¹ There were regular reports in the late 1920s of dismissals at Charlton in particular and other LCC

depots. In mid-1929 there were about 350 skilled NUVB members working at LCC Trams, though a year later 55 bodymakers were dismissed from Charlton, presumably with the end of the reconversion work.³⁴²

Two major developments affected tramway members from the mid-1930s onward. One was the replacement of tramcars by trolleybuses; LUT had started a trolleybus operation on its south-western routes in 1931, and brought with it to the LPTB some 60 trolleybuses, based at its Fulwell depot.³⁴³ The other was the centralisation of repair work resulting from the creation of London Transport. "Within a few hours of the taking over by the LPTB, decisions to close various depots on the tramway system were put into operation." All the municipal undertakings were merged into the Central Repair Depot of the LCC at Charlton, and men from West Ham, East Ham, Walthamstow, Ilford, Barking, Erith, and Dartford were transferred to Charlton. This led to a large number of dismissals, mostly from existing Charlton workers. The West Ham depot was kept on as a paint shop.³⁴⁴

In 1935 the Board announced it was to close West Ham and the former MET depot at Hendon the next year. Tramcars were being replaced by trolleybuses on certain routes in north west London, and the Board intended to develop the Fulwell depot for this work. The Hendon closure meant transferring approximately 300 men to Charlton on the other side of London, though in fact a number went to the Chiswick bus depot and to the Fulwell trolleybus depot.³⁴⁵ By mid-1940, all tram routes operating wholly north of the River Thames were worked by trolleybuses, as were a number of outlying southern systems.³⁴⁶ While this rationalisation led to a drop in employment opportunities for NUVB members, it had one saving grace. From 1935 the old

LCC Charlton hourly rates became standard across the London tram system; these were the highest in the tramway section, and had been based since 1923 on 3d per hour above the national agreement rate.³⁴⁷

Other municipal tram undertakings

Elsewhere, some large corporations built most of their own tramcar bodies. Glasgow bought out its first 80 electric tramcars, converted another 120 from horse trams, and acquired another 83 from other tramways. But, apart from another 50 bought from outside in 1927-28, its own workforce built the rest. In 1933 the Corporation had some 1100 cars, and, with another 100 built in 1937-8, some 1200 by 1948.³⁴⁸ In 1930 the car works at Coplawhill employed some 800, though this was about 200 over the normal strength, due to a reconditioning programme.³⁴⁹ A good number of these would have been NUVB members. 50 NUVB bodymakers were laid off at the end of 1930 with the partial completion of the work, and another 50 a year later when the programme was complete. In mid-1935, Glasgow Corporation Transport Department employed a total of 120 bodymakers and 5 bodymaker apprentices at their tram and bus workshops³⁵⁰ (the latter being solely a repair shop, and the former being engaged only on repairs at the time); to this figure should be added numbers of painters and brush hands, as well as a few trimmers, fitters and smiths.

The Hyde Road car works of Manchester Corporation at one stage was building new tramcars at the rate of one per week, though this slackened off after 1928, and ended in October 1932 when the last new tram entered service.³⁵¹ Liverpool Corporation, which had laid off 120 bodymakers early

in 1932, gradually reemployed them all and built over 300 new cars between 1935 and 1942.³⁵² Edinburgh was the other major British corporation to build its own stock. Being late in transferring to electric traction, in 1919, after an interim period of cable traction, the Corporation's Shrubhill workshops built a number of new cars each year to replace existing stock, continuing to build them for several years after the second world war until a decision was taken in 1952 to replace the system by motor buses.³⁵³ Finally, Dublin built many of its own tramcars at its Inchicore works, including a major building programme in 1931.³⁵⁴

A number of smaller corporations also built new stock, including Sheffield, Plymouth, Halifax and Sunderland. Brighton, for example, built all the 80 4-wheeled cars it had in service in 1935, and continued building new cars until 1937.³⁵⁵

As tramcar bodies were almost indestructible,³⁵⁶ there was probably proportionately less necessary repair work on them than on buses. The services of trimmers, in particular, were little required. "Upholstery, always found inside British buses, was almost unknown in the tram until someone proved positively that more money was taken by cars with cushioned seats".³⁵⁷ As mentioned above, the LCC did not upholster their seats until the late 1920s. In Manchester, upholstery did not arrive until 1929 when the Corporation started to fit some trams with sprung seat-cushions stuffed with horsehair. This was stopped in 1934, after the decision to run down the tram service. But, even then, the upstairs seats always remained wooden, the rule book stating "that 'artisans and daily labourers whose clothing might soil the cushioned seats' could be directed by the conductor

to travel on the upper deck".³⁵⁹ However, regular repainting was necessary, as were conversion programmes to periodically update the stock.

In Britain, electric trams were a historically transitory form of transport, though in many big cities they were in operation for decades, but their maintenance and up-dating kept a significant number of NUVB members in relatively stable employment. Public passenger road transport, both tram (horse-drawn and electric) and bus (horse-drawn, trolley and motor), gave the UKSC, and then the NUVB, the opportunity to establish and sustain a bedrock of membership in most towns and cities in Britain and Ireland.

Table 5:7 Public tram undertakings in London, 1914,
with numbers of tramcars.³⁵⁹

L.C.C.	1,778
L.U.T.	340
M.E.T.	312
West Ham Corporation	118
Croydon Corporation	75
Leyton UDC	60
S.M.E.T.	51
East Ham Corporation	45
Walthamstow UDC	38
Ilford UDC	26
Erith UDC	17
Bexley UDC	16
Dartford UDC	12
Barking UDC	10

Table 5:8 Tramcars and trolleybuses operating in London, 1914-1940. ³⁵⁰

	<u>No. of tramcars</u>	<u>No. of trolleybuses</u>
1914	2,898	
1920	2,886	
1921	2,984	
1922	3,007	
1923	2,971	
1924	2,814	
1925	2,806	
1926	2,760	
1927	2,747	
1928	2,768	
1929	2,748	
1930	2,790	
1931	2,630	60
1932	2,630	60
1933	2,630	60
1934	2,560	61
1935	2,473	63
1936	2,323	300
1937	2,060	494
1938	1,668	1,026
1939	1,316	1,411
1940	1,077	1,699

CHAPTER 6: TECHNICAL CHANGE - PAINTING AND THE ALL-METAL BODY.

"Steel bodywork and cellulose finish are undoubtedly the outstanding developments of the post-War period." - Sir Herbert Austin, 1929.'

PART 1. THE PAINTING REVOLUTION

A. FROM PAINT BRUSH TO CELLULOSE SPRAY.

Introduction

The painting process, as described in chapter 2, required a lot of time and space. Both were at a premium as the scale of production of motor cars increased. If the time taken to prepare, paint, and varnish car bodies could be cut, then not only could more bodies be processed in any given time, but space could also be released. Essentially, there were two main problems facing motor car manufacturers in the paint shop. One was the method of application of the paints - up to the end of the nineteenth century this had always been done manually, by brush, and was a time-consuming process. Secondly there was the long period necessary for drying after every coat.

Faster methods of application than the brush would cut labour costs and make significant savings on the time actually spent painting the body, but

could not affect the drying time, which meant that large amounts of factory space were tied up. Various methods were devised to speed up the application of the paint, mainly the "flowing-on" technique and the pneumatic spray. Oven drying was used to some extent to shorten drying time, but this was dependent on paints and varnishes being available which could withstand a rapid rate of drying. It was not until the introduction of cellulose in the mid-1920s that both problems could be successfully tackled.

Cellulose wrought a total revolution in those sections of the painting process that had been the preserve of the skilled painter, and, as a consequence, the NUVB within a short period lost all claim to be the union that organised motor car painters. While the introduction of cellulose had very important immediate implications for the union, it had been preceded by a variety of other changes over a period of years. It is necessary to look at these earlier changes before it is possible to appreciate the position the union's membership and leadership found themselves in, when confronted with cellulose.

Early alternatives to brush painting

There is some evidence of paint sprays around the turn of the century. While the spraying of paint by the use of compressed air was introduced in the USA in about 1890,² the earliest British reference seems to be in 1900 when it was reported that a pneumatic painter was being used for painting wagons at the Newton Heath railway workshops. Wagon painting did not require such a perfect finish as carriages, and paint spraying was

therefore practicable. It was estimated in 1908 that this spraying machine saved 30% of the paint required by traditional brush methods, and where there were large surfaces, was five to six times quicker.³

But there were problems. In one railway carriage works, quite probably Newton Heath, factory inspectors reported that prior to the autumn of 1909 lead paint had been applied to goods waggons by aerograph, and was responsible for several cases of plumbism. The sprayers had not been affected, but other men in the shop breathing in the air. Consequently, the aerograph was then limited to stencilling letters on goods waggons.⁴ The problem of fume extraction was to dog the efforts of railway companies in Britain to introduce paint spraying over the next half century.

In Britain there was only limited use of such new inventions before the first world war. When the manager of the Brush Company's tram works at Loughborough was asked in 1911 about the aerograph, he could reply in all honesty "I have never heard of it."⁵ The major early developments took place in the USA, where the scale of motor car production was much larger than in any European country. A sudden shortage of skilled brush painters in 1909 caused a production crisis; 130,000 cars were produced in the U.S.A. that year, with many thousands delivered late because of the skill shortage. This speeded up the introduction of the practical spray gun and the drying oven, although it was not until 1917 that the spray came into general use in America.⁶

In some American factories in 1913, the filling coats were also applied by a compressed air spray. The body was mounted on a turntable, and the

operator stayed in a fixed position while the work revolved. An extra 25% filler was wasted compared to hand work, but this was more than compensated by the time saved. Heated rooms were also being used to enable paint and varnish dry in a matter of hours, even minutes.⁷ A very comprehensive account of the new techniques comes from a study of Ford's Highland Park works in Detroit in 1915.

A workman, wearing a mask, used a giant atomizer, with a pressure of 80 p.s.i., to spray bodies with a brown primer. This was then smoothed out and touched up by brush. The primer was dried for 24 hours before sanding, and then a blue-black coat of primer was "flowed-on". Two operators stood on opposite sides of the track, equipped with hoses with fanlike vacuum cleaner nozzles. The ends of the nozzles, instead of being entirely open, were perforated, the holes extending in a line at right angles to the direction of the flow. Using gravity only, a large tank with a sufficient head ensured a flow of about 6 gallons per minute. Again, points missed were touched up by brush.

About 2 gallons were flowed on to each body. Tanks underneath caught all surplus paint which was recycled; one gallon actually being sufficient for 11 bodies. Two coats of colour varnish and one of finishing varnish were also applied by flowing-on, with touching up by brush. After each of these coats the body had to be thoroughly dried. Although we are not told the drying times, massive storage facilities were obviously necessary.

After the final varnish coat had been flowed on, it was "carefully retouched by hand, in order to insure a perfect surface free from air

bubbles, dry spots, bits of hair, and dust." Even in Henry Ford's factory there was a need for some skilled men.⁹ By 1915, at Ford's Trafford Park factory in Manchester, the flowing-on technique had similarly superseded the brush. Here, between each coat, the bodies were stacked on top of each other in threes, and nine bodies put into each stoving oven, one man tending 4 ovens at a time.⁹ The Ford method, however, being based on an enamel paint that could be baked at high temperatures, was very limited in its colour range; hence Henry Ford's famous comment that you could buy one of his cars in any colour as long as it was black.¹⁰

In Britain, it has been estimated that "only a few large factories making vehicles or bodywork had compressed-air apparatus installed before 1914", but that it was extensively used for painting army lorries during the war.¹¹ Vulcan of Southport were credited by one source as being the first British automobile concern to adopt spray painting,¹² while the Arrol-Johnston factory near Dumfries was noted in 1916 as spray painting its wheels.¹³ There was, after the war, evidence of the flow-on method in Britain, Angus-Sanderson in Newcastle using it in 1919-20,¹⁴ and the General Motors plant at Hendon in the early 1920s.¹⁵ Arrol-Johnston used the system to paint its bodies, with a tank containing paint or varnish placed high enough to gravity feed through a tube to a nozzle which sprayed the paint on to the body. They claimed that every coat of varnish on their cars at the 1921 Motor Show had been applied by this method. One drawback, of course, was that a car could not be painted more than one colour by this method.¹⁶ In early 1926 Singer was still using flowing-on apparatus for paint and varnish.¹⁷

However, in practice, there may have been little difference between spraying and flowing-on machines at this time, and both were fairly widespread outside of the specialist coachbuilding concerns. A 1921 British manual recorded that "In the more modern shops, various paint-spraying machines are installed, as also are the baking ovens, all of which are necessary for the reduction of high manufacturing costs".¹⁹ One area of wide use was for painting chassis. AEC, the London bus chassis manufacturer, spray painted its chassis, it taking 2 men 18 minutes, compared to the old brush method which took 4 men one day.¹⁹ At Morris Motors in Oxford, the much smaller car chassis were each spray-painted in 2 minutes by 2 operators.²⁰

Initial NUVB reaction

The first references to the spray in NUVB records were in the north-west, where its impending use at Leyland Motors was expected in late 1918;²¹ it was being used at the Dick, Kerr tram contract shop in Preston in 1919;²² and NUVB painters at Belsize Motors in Manchester were refusing to allow anything other than filling to be done by spray in 1920. The EC agreed to support them, and the Manchester DC decided to support the executive in any action taken to abolish the spray.²³ When the executive appealed for particulars about paint spraying early in 1920, it got little information from the branches, however.²⁴

The engineering employers already had a definite policy on the use of the spray, when the issue was discussed in negotiations for the National Woodworkers' Agreement of 1920 (see chapter 7). In December 1919, the NUVB

successfully got the employers to delete "spraying" as part of the description of the brush hand's work. But while they argued that if a spraying-machine were used, it should be the painter's job, the employers contended that spraying came outside their grading scheme.²⁵ Two months later, when Assistant General Secretary Smith asked for "the precise words which will cover who is to use the spraying machine", the employers could only repeat that "it is a labourer's job and therefore ought not to come under any system of grading".

When Smith contended that in federated shops, skilled men were doing spraying, the employers replied that if craftsmen were sometimes put on spraying, they would take their rate with them. However, some unskilled men and women did use the spray, and the NUVB were forced to argue that an unskilled operator would leave a fine mist in the shop which could be avoided if a tradesman were used. The union's continued insistence that spraying should be done by the skilled painter finally elicited the reply "It is a very big question you are raising, and I think you had better leave that with us".²⁶ In fact, that is where it was left, the failure to agree leaving the union to fight its case shop by shop. At the local level NUVB policy was often to initially try to restrict the spray's use, rather than demand that their members used it on the skilled rate.

London was one area affected by these developments, and, in 1920, the London South branch sent an anti-spray resolution to the executive.²⁷ In May of that year, the spray was reported at an LGOC works; and the London District Committee supported the executive's view regarding its restriction wherever possible.²⁸ However, by at least May 1922, the union had

negotiated a rate for LGOC sprayers as semi-skilled workers, but 2d per hour above the brush hand's rate.²⁹ In general, though, the spray was fairly rarely used outside of the car industry at the time. Here, however, it was making significant inroads into traditional coach painting practice. Austin started applying coach paint by spray in 1919. One coat could be applied in 20 minutes compared to the 3 hours necessary using the brush method.³⁰ Austin works manager, Engelbach, reported in mid-1925 that all their bodies were spray-painted.³¹ At the Vickers bodybuilding factory in Crayford, the NUVB complained in 1922 that some spraying operations were being done by women.³²

In Coventry, it is not at all clear to what extent spray painting took place in the car factories in the early 1920s, but there was much discussion of it in the NUVB branch in late 1919 and early 1920. A special branch meeting agreed not to oppose the use of the spray and to claim the work as skilled painters' work.³³ A deputation of painters from the Humber told the branch committee they wanted all operations after rubbing down to be paid at the skilled rate. Delegates then met from Coventry, Birmingham and Wolverhampton districts, and communicated their views on spraying to the executive. A special sub-committee of the Coventry branch was formed to collect evidence on the extent of spraying.³⁴ Unfortunately, no record exists of its findings, and the issue disappeared from the branch minutes, apart from references in mid-1920 to chassis painting and spraying at Humber, and the operation of a spraying machine by a labourer at Swift.³⁵

Nothing further was recorded in Coventry until early 1925 when, at the Standard Motor Company, it was not possible to finish a particular saloon

body by use of a flowing machine, and some of the NUVB painters were reluctant to finish it off by brush. The manager asked them to see their branch officers, who advised them to do the work as long as they received their usual wages.³⁶ Presumably the flowing machine operator was not paid the skilled rate.

Spraying or flowing seemed to be quite widely used in the mass production shops on the higher volume models, Humber, for example, spraying about 100 bodies per week in mid-1925.³⁷ But some low volume models in these shops were probably still brush painted (see below for Humber), and there would, no doubt, have been other employment for brush painters - rectification work, possibly final varnishing, any lining necessary, plus work in the coachbuilding concerns in the town. With the expansion, therefore, of car production in the early 1920s in Coventry, skilled brush painters would still have found work. Their main problem would have been spraying operations generally being paid at the semi-skilled rate, and that probably meant they either did not do that work, or did it in the knowledge that under piecework they could still earn a good wage.

Generally, however, the union's position in the early 1920s was against the spray, because not only did it threaten cheap labour, but even where the skilled rate was paid, the spray generally meant fewer employment opportunities for skilled painters. Thus when the spray was introduced into one of the largest Manchester shops, there was strong objection to it, and organiser Floyd argued "if only we can get some evidence that its use is detrimental to the operators, then there is a possibility of getting it removed from the factories". The EC took this up in the Journal and once

again appealed for evidence. They were resolved to make every effort against it on health grounds, arguing that operators having to wear masks showed it was dangerous.³⁹ But this was often difficult, and the Bristol branch's reaction in 1925 was to insist on the full rate.³⁹

One contemporary observer believed that skilled painters should have embraced the new painting methods, arguing "it might be said that these methods depend more upon the nature and quality of the materials used than upon any special skill of the operator, and yet in every case the experienced painter should make the best operator, and we should probably see far less unskilled labour introduced into our painting shops if the mechanic would take more kindly to the introduction of new notions and go out of his way to master them."⁴⁰ The union, however, never really came to grips with paint-spraying in the early 1920s. London-based Assistant General Secretary, A.E. Smith, surveying the many points facing the 1924 Delegate Meeting, wrote "the increased use of the spray, dipping, and the stove process, are bringing about quite a new condition of things. The chemist, too, is busy with new pigments, and together with the colour manufacturer, is constantly evolving new methods designed to reduce both time and skill."⁴¹ The Delegate Meeting apparently had other priorities.

The introduction of cellulose

While the union's policy on the paint spray could muddle along in the early 1920s, the situation became profoundly more serious with the change-over from coach paint to cellulose. Once again, the American car industry led the way. While the move away from brush painting on mass produced cars

in America before the first world war, had eased the bottleneck situation in the paint shop, the increasing scale of production after the war accentuated the need for further development. At the same time there was a problem with the quality of finish.

Some kinds of enamel, baked at very high temperatures, could be quickly applied and were reasonably durable, but their colour range was extremely limited. In the early 1920s, Ford, Dodge, Overland, and General Motors used only black enamel on high volume production cars, giving cause for complaint. Meanwhile, those cars still finished with traditional paint and varnish suffered paint peeling off due to the combination of the extremes of climate in the U.S.A. and the temperature changes caused by the engine.⁴² As Alfred P. Sloan Jnr of General Motors later wrote: "We dreamed of what a wonderful thing it would be if a finish could be developed which would last even if the car stood out in all kinds of weather. We also began to realise that a good, fast-drying finish could revolutionize our time schedules and the consequent cost of production."⁴³

The need for a fast-drying finish was paramount. According to Sloan, the whole painting process could take two to four weeks, depending on temperature and humidity. A daily production of 1,000 cars meant 18,000 cars in progress, taking up twenty acres of covered indoor space. In July 1920, the du Pont laboratories discovered the colour carrying properties of cellulose lacquer. The next year, General Motors, in cooperation with du Pont, initiated the research that led to the development of a nitrocellulose lacquer, known eventually as "Duco". This was first used in 1923 in production of the Oakland range of GM cars for the 1924 season.⁴⁴

It was then standardised on all GM cars in 1924, including the top of the range Cadillac in 1925.⁴⁵ It was estimated that by early 1927, of 174 models offered by American manufacturers, only 20 were finished in enamel and varnish, the rest being cellulosed.⁴⁶

"Duco" was made available to the entire American motor industry in 1925.⁴⁷ Within 2 years, more than 90% of American cars were finished in cellulose.⁴⁸ Accounts differ as to which was the first British car company to use cellulose - one suggesting AC Cars,⁴⁹ another Standard Motors⁵⁰ - but it swept through the British motor car industry very quickly from mid to late 1925. Standard authorised the expenditure for the installation of the necessary plant in April 1925;⁵¹ Austin transferred to it early in 1926;⁵² by June 1926, Daracq was using cellulose for 90% of its work.⁵³

The saving in time was the key factor in its widespread adoption. "The Autocar" reported in July 1925 that while there was little difference in the cost of an average car sprayed with cellulose, and one finished in ordinary paint and varnish, there was a considerable saving in time. Cellulose finishes needed careful cleaning and flatting, but dried much faster than paint and varnish.⁵⁴ In September 1925, "The Autocar" noted that "some" British manufacturers had adopted cellulose and similar finishes, and expected them to become extremely popular in the coming year.⁵⁵ By November, manufacturers of cellulose enamels were "finding difficulty in supplying the demands made upon them for the necessary materials" and were expanding their plant to increase production.⁵⁶

At the 1926 Motor Show, a number of companies specified cellulose finish. They included not only a large producer like Austin, but also small to medium-sized ones like Armstrong-Siddeley, Sunbeam and Cluley; and coachbuilders' bodywork on other manufacturers' chassis also included cellulose finish by such small concerns as Beadle, Cadogan Motors, and Howes & Sons of Norwich.⁵⁷ Early in 1927, though, at least one Coventry car body producer was still sceptical of cellulose, finding that no cellulose filler had any appreciable body to it and all took a long time to apply; while the colour range of cellulose enamels was still not very wide. "Before we go on to cellulose we must be assured that it has as wide a range of colour as paint." Not only this, but also "Body builders have a very serious problem to face in changing over from paint to cellulose owing to the long time which has to elapse before they can be satisfied as to the durability of the cellulose".⁵⁸

But the tide was running strongly in favour of cellulose. "The Autocar" report of the 1927 Motor Show found that the "high gloss and lustrous surface" obtained from cellulose was "equal to the best varnished surface".⁵⁹ Some of the more expensive cars were now finished off in this way, Van den Plas producing a cellulosed body on a Bentley chassis, while a small Stockport firm produced one on a Daimler chassis,⁶⁰ and Salmons produced a cellulose-finished Rolls-Royce saloon.⁶¹ At the 1928 Show, however, there were still a number of cars displayed which had been coach-painted, for example, a Hall Lewis body on a Daimler, and an Offord body on a Minerva chassis. But Rolls-Royce bodies by both Connaught and Barker were cellulosed, and coach paint was definitely on the way out even for the most expensive cars,⁶² "The Autocar" reporting that "Cellulose finish is almost

universally used for steel coachwork, and is frequently applied to even the highest class of coachbuilt body."⁵³

Of course, there were variations among the specialist coachbuilders. Late in 1924, the London car bodybuilders in the NFVT were seriously discussing the new system. "Anything that would reduce time and cost which the present method of painting entails was worth considering". But as it was still at the experimental stage at this time in Britain, many coachbuilders preferred the old method.⁵⁴ In mid-1926, the NFVT executive sent out a questionnaire to 199 member firms; of 38 replying, 11 were using cellulose. At that stage, the new method was still more expensive, but the NFVT were anxious to generalise experience, and organised a talk.⁵⁵

Vanden Plas were one of the first coachbuilders to introduce cellulose painting. Because of their involvement with aircraft manufacture in the first world war and their association with a manufacturer of "dope" (used in the treatment of fabric wings) they introduced a primitive cellulose spray shop in 1925. Paint and varnish were rendered almost obsolete except for repair and reconditioning work.⁵⁶ But at Hoopers factory in Chelsea, even in 1928, cellulose was used only "in some cases".⁵⁷

Bergers held a demonstration of cellulose painting at their works in mid-1926, at which many coachbuilding firms were represented.⁵⁸ Nobel Chemical Finishes opened a demonstration centre, fitted out with spray booths, in Chiswick High Road in 1926. "Free courses were given by a team of trained spray painters. It was estimated that some 80% of the paint shop staff of British car manufacturers received their first training at the

Chiswick Centre, which was closed in 1928."⁶⁹ Other cellulose manufacturers also opened demonstration centres to instruct prospective users.⁷⁰

One writer has suggested that by 1930 all new British motor cars were finished in cellulose.⁷¹ Certainly in 1929 hand painting and varnishing was becoming rare, with one of the Crossley bodies being among the few still being done in this way;⁷² though in 1930, Weybridge bodybuilders Hoyal were still getting the occasional order for a carriage-varnished body.⁷³ Swallow, which started coachbuilding in 1927, experimented with cellulose in 1928, before finally abandoning coach paint and varnish early in 1930.⁷⁴

Even mass producers did not experience a totally straightforward transition to cellulose. Until the 1929 season (ie late 1928), wood-framed Flatnose Morris cars at Cowley were spray painted with air drying paints, while the all-steel bodied Morrises were finished in cellulose and oven-dried, suffering no ill-effects from the heat. From this date, however, both wood-framed and all-steel Morris bodies were finished in oven-dried cellulose.⁷⁵ In 1928, Humber were cellulosing open bodies, while closed cars were painted and varnished in the old way, with the final varnishing being done by brush after the bodies had been trimmed.⁷⁶

Vickers of Crayford, producing saloon and open bodies for Renault and Fiat in 1928, claimed that cellulose allowed them to handle the work without damaging or marking the finish, as well as eliminating the elaborate precautions necessary when varnishing.⁷⁷ But cellulose equipment was not cheap, Singer spending £70,000 on the necessary plant.⁷⁸ But the time saved was very great. At Vanden Plas in the early 1920s traditional

brush painting and varnishing methods took at least 3 weeks to finish a body,⁷³ while at Austin, even sprayed coach paint took ten days, which was reduced to five with cellulose.⁸⁰

A paper delivered to the Institution of Automobile Engineers in late 1925 suggested that with cellulose, total painting time was only 6 days.⁸¹ Of the several different types of material on the market, the manufacturers of "Proxcelin" claimed it took half as long again to finish a car with "the old style paint and varnish" as with Proxcelin. The makers of "Cellusol" claimed that an eight-coat scheme would take 5 or 6 days, while a six-coat scheme took only 4. And "Celvalac"'s makers argued that changing the colour on a car could be done in "a few days" with its material, as opposed to the three weeks usually required for a varnish finish.⁸²

While cellulose replaced the colour and varnish coats, priming and filling coats remained initially oil-based and thus constituted the bulk of the time the bodies remained in the paint shops. A description of the application of "Belco" to Vauxhall cars brings this out. Once the body has been cleaned free of grease, a primer coat was sprayed on. Then putty-glaze was applied with a spatula or knife to fill in file marks and small depressions. This required at least 6 hours drying time. Following this, two or more coats of "sanding surfacer" were applied, a hand-beaten and filed panel requiring more coats than a pressed panel. Each of these coats required from 7 to 14 hours to air dry, and the body would therefore be in this preparatory stage in the paint shop from 2 to 6 days depending on the quality of the panels.

After sanding down, the Vauxhall would receive 5 coats of Belco in about half an hour. While these coats were dry to the touch in about ten minutes, the bodies were usually left overnight for the cellulose to harden. Because Belco dried so quickly, it could not be applied by brush or by the dipping process; it also had no time to collect foreign particles, and therefore did not need a heated or dust-proof atmosphere. With the subsequent polishing operation, the body would only spend some 2 days in the paint shop after the first application of Belco.⁹⁹

While NUVB members had apparently accommodated themselves to some extent to the new practices of spraying and flowing-on coach paint, cellulose wrought a total revolution in traditional paint shop practice. The NUVB's attempts to cope with it are dealt with in the next section.

B. IMPACT OF CELLULOSE ON THE NUVB.

Before the introduction of cellulose into Britain, paint sprays were generally confined to the larger factories. Whether the varnish coats were put on by brush or otherwise in these factories is not clear, though the final varnish coat would be brushed on if the trimming work had already been done. But in many establishments producing car bodies, brush painting remained the rule. As the industry was expanding rapidly in the early 1920s, there was no special problem of unemployment among brush painters.

While there was limited concern nationally in the union about the use of the paint spray in the early 1920s, the introduction of cellulose was of much greater importance to the union and its painter members. It immediately revolutionised the whole process of colour painting. Instead of the application of a number of colour coats of coach paint by brush or spray, followed by varnishing and flatting, there was the rapid application by spray of several coats of cellulose, followed by flatting and polishing. The varnishing process totally disappeared. The significance of this was summed up by a Vauxhall manager in 1927 - "A semi-skilled man can be trained to spray in a few weeks, whereas a varnish 'finisher' is a highly skilled operator requiring many years' experience."⁸⁴

Of course, the introduction of the process was not totally smooth, as contributors to a discussion of automobile engineers pointed out. One mentioned that the "foreman painter is afraid of the new process";⁸⁵ another that cellulose required very thorough stirring before application,

and that as most operators were on a piecework basis "the stirring often gets omitted".²⁵ But whatever the teething problems with cellulose, it made brush painting redundant in the motor car industry almost overnight. In particular, after the application of colour, the "skill" of varnishing was replaced by the job of polishing, sometimes performed by women.

There had been problems in the Rover paint shop in Coventry regarding female labour as early as May 1925. But when cellulose was brought in, a 2-day strike ensued in February 1926 to get the women removed from the polishing operation. This was partly successful, as the company agreed to replace the women by unskilled adult male labour. Some men were soon engaged on facing at the semi-skilled rate, but the union had to keep on pushing the company to remove all the women, which was accomplished about five weeks after the strike.²⁷ About the same time, women were reported doing the final polishing on open bodies at Standard, while male flatters were polishing at Armstrong-Siddeley,²⁸ also in Coventry; and a meeting of all Coventry NUVB painters agreed to claim "that all operations after being rubbed down is a skilled job" and to ask that the skilled painters' rate of 1s0⁴d be paid for it.²⁹ At Carbodies in Coventry, an organising meeting, held in March 1927, discussed the cellulose process and organiser Francis insisted members adapt themselves to this development.³⁰

An engineering employers' questionnaire in 1929 suggested that in Coventry, while spray painters had transferred from paint spraying to cellulose spraying, they had, with the exception of 2 unnamed firms, all started on cellulose work at the appropriate semi-skilled rate. In the two exceptions the skilled rate was retained by paint sprayers when they

transferred to cellulose work. It is not clear which these firms were, as representatives from Standard, Daimler, Armstrong-Siddeley, Humber and Rover, all agreed in 1929 to act in conformity with the view that cellulose spraying should be recognised "on the whole" as a semi-skilled job.²¹ At Humber, when cellulose had been introduced, skilled rates had been dropped to semi-skilled and the men had accepted the position. By 1929 they were agitating about this, but did not formally complain to the management, and decided to await the outcome of a special conference with the engineering employers soon afterwards²² (see below).

When Midland organiser Bowen reported early in 1926 that the semi-skilled rate was paid on cellulose operations in Coventry, he was aware of the profound significance of cellulose for the union. He stated forcefully "we think it necessary to say to our painters that they must insist on doing these jobs, *whether they like them or not*, for, with the developments now taking place, it is likely in the near future that if the painters refuse the operations, semi-skilled and unskilled men will be drafted in, and the painters' job will be gone."

Going further, he pointed out "The whole question of Mass Production work *ought* to receive the attention of all our members, and a *definite policy decided upon* for each of the trades - Bodymakers, Painters, Trimmers, etc." At the same time, Halliwell, reporting from London, referred to an attempt to put labourers on to cellulose polishing, saying that "we have claimed this work for body-painters, *or at least brush hands*". Having pointed out that no general practice prevailed, he argued

"we have to urge that a definite line of policy must be taken up or the painters will find cheap labour introduced to their detriment".⁹³

The union, however, appeared initially to have no national policy on the subject of cellulose, or at least no strategy to implement any such policy. The engineering employers were only too aware of the implications of cellulose, and took a strong stand over cellulose polishing. In July 1926 at a joint meeting of various sectional National Technical Committees, they recommended that this was a new operation and did not require skilled labour - "*the principle involved is of such importance that all firms should maintain this attitude even though it should involve a question of the union withdrawing other labour to enforce a claim for skilled workpeople to be employed on it*". And they agreed that firms should be recommended that when at the experimental stage in the cellulose process they should safeguard their position by not employing any skilled labour on the final polishing.⁹⁴

By this time the union had had at least two notable tangles with the engineering employers, apart from the Rover incident. At Daracq in London there had been discharges of a number of skilled coachpainters in May 1926, and women had been put on cellulose polishing. NUVB Assistant General Secretary A.E. Smith wrote to Daracq threatening to withdraw all members if the firm did not remove the women, but at a Works Conference a few days later, he accepted management's right to select whoever they wanted for cellulose polishing, on the understanding that if vacancies arose on this, then men who might otherwise be discharged should be given a trial.⁹⁵

The union then took Austin Motors to a Local Conference in July that year over the rates for cellulose work, with the employers claiming that cellulose operations were not covered by any existing agreement, and that they could employ who they liked, at what rate they liked. The conference had come about as a result of Austin laying off some men in June and then re-engaging 2 of them twelve days later at a lower rate on cellulose work, whereupon the NUVB instructed them to refuse to start work. The local or domestic argument centred around whether the men had originally been discharged or merely suspended, but underneath this particular argument lay the much more important principle of whether the two men who worked on flatting and facing were doing the same work on cellulose as they had been on paint and varnish before they had been laid off.

Bowen, for the NUVB, claimed they were, while the employers disagreed, arguing that "under the cellulose process the operations are so elementary that they can be performed by people....with practically no experience at all", and that there was plenty of evidence that men and youths "who have never seen the inside of a factory before.....in about a fortnight's time were doing the job effectively". As far as the employers were concerned "the cellulose process does not come under the National Agreement at all.....there could not have been contemplated within the terms of this agreement an operation embodying new principles which in point of fact was not invented when the agreement was drafted". The employers claimed that at Austin every man who had moved over directly from paint and varnish had kept his old rate; the union argued that the higher-rated men had been dismissed, and only the lower-rated moved over, but did not go for a central conference on the issue.⁹⁶

While the car manufacturers affiliated to the engineering employers generally succeeded in getting or keeping the semi-skilled rate for spraying operations, there was not a monolithic response. Thus Leyland Motors reached an agreement in September 1927 with its painters that while polishing should be done by any labour the firm chose, other painting operations - spraying, flatting down, lining, and pencil-varnishing - should be done by skilled coach painters at their normal rate.⁹⁷ Some two years later they claimed this was a satisfactory arrangement, bearing in mind the high class nature of their work, though pointed out "if our work was not of such a high quality we should probably have to adopt other methods".⁹⁸ (In fact, in 1932, there were complaints by the union that the company had attempted to introduce labourers on to colour spraying.⁹⁹)

The quality issue was important. Of three federated London firms questioned in 1929, one had already used unskilled labour on spraying before cellulose came in; another paid semi-skilled rates, though very occasionally transferred skilled men with their skilled rate to cellulose work; a third, however, insisted that men employed must be able to do both cellulose and coach painting, and paid the same rate for sprayers as it did for finishers & liners, which was higher than it paid for ordinary coach painters & liners. This was obviously a firm still doing coach painted jobs, and requiring men capable of this work.¹⁰⁰

The issue of female cellulose polishers seems to have caused little difficulty, though the union had problems with it at two unfederated firms, Midland Light Bodies in Coventry in 1927,¹⁰¹ and in Singer's Birmingham factory in 1928. In the latter plant, there were girls of 14 and 15 engaged

on flatting and polishing. A meeting of Singer members in Coventry voted to try to prevent their doing this work, but eventually had to accept them as part of a wider settlement of outstanding grievances.¹⁰² But fears of women taking over jobs in traditional NUVB paint shop territory tended to be confined to the mass production shops. Even here, though, female involvement was fairly low.¹⁰³ Elsewhere the union was more concerned that its members took on the cellulose spraying itself.

The NUVB did not include any reference to cellulose or paint spraying when it sent forward proposals in January 1926 for that year's UKJWB wages agreement.¹⁰⁴ Nicholson later suggested that some time during 1926-27 the vehicle building employers had told the NUVB that they would be paid the full painters' rate if they gave full recognition to cellulose spraying. At the time the union leadership was divided on this, and missed the opportunity. (There is no documentary evidence for this claim.)¹⁰⁵ In 1927, when the union did claim the painter's rate for all paint-spraying processes, it was to no avail, the employers arguing that such a move would drive the cellulose process into non-union shops.¹⁰⁶

Midway through 1927 the NUVB executive reported that "Many of the small shops are now laying in the plant for cellulose spraying, and putting it up to our painters to use; in a number of cases our members have objected, and unskilled or semi-skilled men have been trained for the work.... We are convinced the policy of our members should be to take over this work." They added that cellulose was "not so injurious to health as is sometimes thought", which was a significant change in attitude, for, like sprayed coach paint, they had initially emphasised the health risks.

Very importantly, the executive stressed that "Employers with whom we have had to negotiate do not put serious objections to the full painter's rate; in fact, most offer it quite unconditionally to secure practical sympathy for the innovation". However, the affected membership did not always take such a positive attitude. Halliwell reported from London that "Our painters, as a whole, will have to show less reluctance towards this process if they wish to hold their own".¹⁰⁷ Towards the end of 1927 Halliwell visited the Dover works of the Connaught Carriage Company and admitted "I stand convinced, for the first time, that cellulose is a rival to varnish on first-class jobs". As a selling point he reported that "the Director informed me that the secret of the success lay in the employment of first-class skilled labour".¹⁰⁸

In Manchester, a well-attended special meeting of all the painters in the area was held to hear a lecture from the managing director of a cellulose manufacturer. Organiser Floyd commented, "The majority of painters now realise that it is up to them to get hold of the machine and control it".¹⁰⁹ Within a very short time, the executive gave the Manchester branch the power to stop the benefit of any members refusing to accept jobs where the spray was being used and Home Office regulations enforced.¹¹⁰ At the beginning of 1929, the EC was still having to "urge our members where the old systems of the paint shop are denied to them, to adopt themselves to the new". Three months later, the general secretary, looking back over the previous few years, admitted that the executive had had "to drive quite a good proportion" of the membership into recognising cellulose spraying, and apparently in only one district was there a total refusal.¹¹¹

In 1929 the union attempted a revision of the EEF national woodworkers' agreement, including the skilled rate for cellulose work. A central conference referred this issue to a meeting of the engineering employers' various woodworking sectional technical committees, who were unanimous that skilled labour was not required on any operations up to the first colour coat, or on final polishing. There was a difference of opinion as to whether on some high class jobs, a skilled painter should be employed on the colour coats, but overall it was decided to recommend the federation to resist any union claim for the skilled rate for any of these operations.¹¹²

NUVB Strategy

The early forms of paint spray had been introduced piecemeal in sections of the industry by the mid-1920s and had not appeared too significant a threat to the union. The introduction of cellulose, by contrast, occurred almost simultaneously across the motor car industry, and was a much more serious threat. It was only at this time that any systematic national strategy could have been implemented by the union to control the conditions under which it was used. A major factor militating against any successful strategy was the speed with which cellulose was introduced for car painting. But even if the union had had more time to work out a strategy, there were a number of other factors which lessened the urgency with which the national union leadership, and the majority of the members, including the majority of painter members, faced the problem.

To begin with, the issue was clouded to some extent by female labour. The executive talked about retaining the industry "for men's labour" early

in 1926.¹¹³ They endorsed the above mentioned action of the Rover painters striking for the removal of female polishers, and threatened to initiate similar action at Daracq but backed down.¹¹⁴ Attention was thus, perhaps inadvertently, diverted away from the more serious issues.

Secondly, there was a mixed reaction on the part of the employers. As noted above, the engineering employers had, by the middle of 1926, worked out a national policy on cellulose polishing; while on cellulose spraying they benefitted from the fact that many employers had already established ordinary paint spraying at a semi-skilled rate. A few engineering employers, seemingly on high class work, allowed the skilled rate, however. Among the non-engineering coachbuilding concerns, it is difficult to generalise. The majority were prepared to, and many did, pay the skilled rate for cellulose spraying, but where NUVB members had initially resisted taking on the work, the semi-skilled (brush-hand) rate would have been established. Facing this varied response, it was probably a matter of getting whatever was possible, at the time, employer by employer. But the union executive do not appear to have at any time given the promise of backing to any members thinking of striking to retain the skilled rate.

Thirdly, and not mentioned so far, from roughly 1923 to 1933 almost all cars had fabric body options available, and these effectively cut out paint shop personnel completely (though some had the fabric cellulosed). This factor may well have appeared to many in the leadership and among the affected painter membership in the mid-1920s as overshadowing the cellulose threat. Thus, in the northern organising district covered by Floyd, in the autumn of 1928, it was reported that unemployment had hit the painters the

hardest due to "so many fabric bodies" and the use of the spray.¹¹⁵ In Scotland, the same two factors were blamed for heavy unemployment among painters, with Symington arguing that a national and local response was necessary, including restricting the numbers entering the trade.¹¹⁶ Accordingly, the Edinburgh branch suggested a reduction in the number of painter apprentices from 1:4 to 1:6. This was put to the Scottish employers in 1929, who rejected it.¹¹⁷

But most important of all was the fact that the spraying of paint, let alone cellulose, was not practicable for much of the vehicle building industry at the time, and in some instances took decades to be introduced. It did not, therefore, affect all paint shop members. Even in the centres of car production in the mid-1920s, there was generally alternative vehicle building work available. Manchester had railway workshops and trams; London had railways, and substantial employment on bus and municipal tram maintenance and building, as well as a multitude of small coachbuilding concerns; Birmingham had railway carriage and bus contract shops. Only Coventry was unique as a significant centre of NUVB membership with effectively only the car industry as its potential employment. Elsewhere, in non-car industry areas, cellulose was by and large not an issue; brush painting and the skilled brush painters ruled supreme (see section C below).

The Scottish experience

The changes in painting methods did, however, have some impact in the 1920s in parts of the industry away from motor car production. One area

where sufficient material on this is available is Scotland, and the experience there highlights a number of general points.

Organiser Symington had already reported in the spring of 1926 that there was a "relatively large number of Painters who remain unemployed during the height of the busy season". He put this down to jobbing work at night, and "The introduction of the spray and the tendency towards employment of Brush Hands in preference to Painters". According to him, the spray was lowering the standard of quality desired, and consequently gave the brush hand a wider area of work. Brush hands were now performing operations done not very long ago by painters. Apart from the employers' desire for "cheap labour", there was also "some Painters' desire to escape the dirty and more laborious operations"; and the combination of these meant that "painting is developing into a condition whereby, eventually (unless an alteration is made) the most of the work will be done at the Brush Hand rate of pay with a minority of Painters doing the highest skilled operations at the skilled Painters' rate".

Symington saw the remedy as specifying what constituted the respective operations of brush hands and painters, and that painters should be paid the painter's rate irrespective of their work, while brush hands should be paid the painter's rate when engaged on painters' work.¹¹⁹ And in the next year, 1927, the union negotiated a clause with the Scottish employers' organisation, the SNVBA - "Brush Hands shall not be employed beyond the first coat of paint after the rubbing down of filling, and not beyond the ground coat on unprepared surfaces". This was to be on trial for a year, with the union agreeing to take a broad view regarding rough lorry work.¹¹⁹

In 1928 the Glasgow branch informed the executive of non-union men and members of other painting unions obtaining employment on the cellulose spraying of vehicles to the exclusion of NUVB coach painters.¹²⁰ The next year, Glasgow, Springburn and Edinburgh branches got the EC to withdraw an Edinburgh member who was an instructor at a Springburn-based Ministry of Labour training class in coachpainting for ex-miners. The trainees received six months intensive instruction and were then placed in jobs in garages, where the union could not get at them, and were paid well below even the brush hand rate. The Scottish branches had about 600 painters in membership, and unemployment among them had fluctuated between 10 and 30% in the previous two years. The EC then took up the whole issue with the Ministry of Labour with a view to getting training stopped in the painting branch, but had to settle for a slight reduction in the numbers trained in Britain as a whole.¹²¹

In January 1930 a serious problem arose in Glasgow with an NUVB brush hand operating a cellulose spray at the bus builders Cowiesons, painter members there not being anxious to do the work. The Glasgow branch committee decided that the brush hand should be removed from the spraying operation and sent a delegation to the firm. Meanwhile the firm had started a non-union sprayer as well, but the branch committee refused to admit him to membership.¹²² When the organiser interviewed the firm, they told him they were not prepared to pay off either the brush hand or the non-union sprayer. "Their reason for not doing so is that the union cannot supply them with sprayers." When a deputation from the shop agreed with the firm's attitude, the committee decided that the organiser should try to get the painter's rate for the brush hand sprayer.¹²³

Not surprisingly, Cowiesons refused to pay the full rate to the brush hand, and the branch committee ruled that the brush hand be stopped from spraying immediately. But painters in the shop did not carry this out and let the brush hand carry on until they got an EC ruling. The branch committee reconvened in the canteen at Cowiesons and informed the members that the committee was acting in line with EC decisions. The paint shop members then agreed to tell the manager the next morning to stop the brush hand from using the spray. The organiser reported the next day that he had visited the firm and told them to stop the man from spraying.¹²⁴

Nothing further was minuted on this case, and it can only be assumed that the branch was successful here. But the issue does highlight the twin problems that the union had no national agreements with the employers on the rate for cellulose spraying, and that the union's own members were sometimes reluctant to take on the work, thus opening the path for non-unionists or for brush hands who would invariably be paid at a semi-skilled rate. Once coach painters had refused the work, they did not usually get a second chance.

Later Developments

It was not until 1934 that the union got an officially recognised rate for cellulose polishers in the coach trade. In the absence of a national agreement, a local wage agreement with the four main high class London coachbuilders - Barker, Hooper, Thrupp & Maberly, and Park Ward - in January put the cellulose polishers on a par with brush hands, and a halfpence per hour above rubbers.¹²⁵ Later in the year, the NUVB extended

this to a belated national agreement for England and Wales, including putting cellulose polishers on the same rate as brush hands and a halfpenny above labourers.¹²⁶

These agreements caused some unrest among the London membership, centred around the question of who were the skilled men in the cellulose process, and a special meeting decided that the rubbers, facers, and flatters played a most important part, with the finish of the job depending very much on them.¹²⁷ Elsewhere, the Yorks & North East District Council supported a resolution from Newcastle in 1935 that the EC should review the status of cellulose polishers and sprayers, with a view to improving their rates.¹²⁸

But the employers at this time saw no need to make any concessions. At an internal NFVT discussion, it was agreed that there was less skill in spraying than in brushing, and that the spraying of priming and filling coats should certainly not be paid at more than the brush hand's rate. Duples was already paying for spray filling at this rate, while Vanden Plas had done so, but had reverted to brushing on the filling coats.¹²⁹

In proposals put to the UKJWB for the next wage settlement in 1936, the NUVB EC unsuccessfully asked that brush hands and cellulose polishers be brought up from 4½d to 2d below the skilled man.¹³⁰ The next year they proposed that the skilled rate should apply to all painting operations after rubbing down;¹³¹ and the following year claimed that sprayers should be on the skilled rate, that the brush hand demarcation line should be pushed back, and the "semi-skilled" differential reduced to 3½d.¹³² All these demands also failed.

With the war, these issues temporarily faded into the background, but a special NUVB EC meeting, held in late 1944 to determine policy for the coming post-war period, decided to press for brush hands and cellulose polishers to be 2d below the skilled rate.¹³³ But no progress was made on any issue connected with painting until a major breakthrough in 1949 when the coach trade employers agreed that the minimum rates of pay for sprayers, whether cellulose or paint, should be the same as those laid down in the agreement for painters and brush hands, following the established line of demarcation for brush hand's work.¹³⁴

There was no comparable progress on the engineering side. A joint application was put forward in 1946 by the NUVB and TGWU to establish a district basic rate in Coventry for sprayers, polishers, rubbers, and flatters. The local employers turned down any suggestion of a district agreement at a conference in August, claiming it would cut across the national agreement.¹³⁵

A mass meeting of Coventry painters in November was addressed by national officials from both the unions involved and it was decided to pursue the matter further.¹³⁶ However, the January 1947 NUVB executive meeting decided not to go ahead with a joint claim, as they felt the national woodworkers' agreement, to which the TGWU was not a party, covered the position. Adopting a utopian position the executive decided that the TGWU had no right to cater for vehicle building labour, including paint shop personnel.¹³⁷ The Coventry branch committee, however, favoured some concession to the TGWU regarding the organisation of lower grades of paint shop workers, providing the TGWU recognised the NUVB's sole right to

organise other sections of the trade. The NUVB executive moved toward this position, and tried to get an agreement with the TGWU that paint shop labour below the top grade was open for both unions to organise.¹³⁹

Both unions were represented at a central conference in 1948, when the employers "flatly refused to agree to a rate for spray painting". Further efforts to raise the issue, including under the aircraft section of the national woodworkers' agreement in 1951, were similarly fruitless, with the employers insisting that spray painting was an engineering operation, and not covered by the 1920-22 agreements.¹³⁹

In the process of all this, the weakness of the NUVB's position in the Coventry paint shops had been made very apparent, and the local branch sent a resolution to the 1949 Annual Delegate Meeting for the union to inaugurate a campaign for 100% membership in motor car factory paint shops. As the branch secretary explained to the Delegate Meeting, "if he were to tell them of the number of [paint] shops in Coventry in which they were severely outnumbered by the Transport and General Workers' Union, they would realise how serious the problem had become". The overwhelming majority of delegates, however, supported an amendment that the campaign should be directed at the whole vehicle building industry, and, in the process, took the spotlight off Coventry's attempt to pinpoint a major weak area in the union's organisation.¹⁴⁰

In fact, whatever strength the NUVB possessed in the Coventry motor car paint shops had been fundamentally weakened by the mid-1930s, if not significantly before, while in the other mass production centres they were

even weaker or non-existent. Their main claim to speak on behalf of paint shop workers in the car factories rested on their agreement with the engineering employers and not on any strength of organisation. In this respect, the agreement was hollow.

The general problem for the NUVB was, as has been discussed in chapter 2, that where an extensive division of labour operated in paint shops, the union had only generally organised those workers at the final end of the process. There had been a reluctance to recruit brush hands, even though many of them did almost every operation in the painting process. The union's "skilled painters" had traditionally accepted the employers' arguments, that those workers employed exclusively on operations prior to the final ones, should be paid a lower rate. They had also been only too happy to monopolise the "skilled" painting work, which was much less unpleasant as well as being better paid. When the "skilled" end of the work disappeared, NUVB painters were left high and dry, and had to make the best of the situation, shop by shop.

The 1920s did not create a division of labour in the paint shops. It had been there for a long time already. The UKSC's earlier failure to organise paint shop workers generally, rather than the top end of the trade, left the NUVB with little defence when the top end was squeezed out. Fortunately for the union and its members, the motor car paint shop revolution did not have its parallels in other sections of the trade, and hardly affected other vehicle painting, which section C now analyses.

C. SPRAY PAINTING OUTSIDE OF THE CAR INDUSTRY.

As discussed above, the union's overall response to the introduction of spray painting was significantly affected by its very slow diffusion to areas of vehicle building outside of motor car production. There were a series of practical problems which dictated this.

When the paint spray (not cellulose) was introduced into the LCC Tramways Department in 1927, the organiser reported: "A tramcar is not a vehicle that lends itself to the spray: a very large portion of the surface is, of course, glass, and this renders it necessary in order to avoid painting the glass, that a brush shall be used around these parts." Despite agreement with the management on the provision of overalls, headgear, goggles and masks, problems remained, especially in the varnish chamber. The management agreed to withdraw the spray if an alternative economic system could be introduced. It was thus agreed that instead of thoroughly painting a tramcar one year, and then giving it a "wash and brush-up" the next, in future enough only would be done each year to carry the tramcar through to the next. Immediately, 12 members who had been displaced by the spray were re-engaged.¹⁴¹

The paint spray was, however, introduced into the bus and tram depot of Coventry Corporation in 1934,¹⁴² and about the same time in the Birmingham Corporation Salvage Department.¹⁴³ It is not clear when spraying was introduced in the LGOC workshops in London, but it was being used in the early 1920s, as mentioned earlier. One account of the Chiswick works in

February 1922 stated clearly that the whole of the body painting and varnishing was done by hand,¹⁴⁴ while another account in June of that year declared "Repainting is effected by means of air sprayers,....surplus spray being drawn away through vacuum pipes".¹⁴⁵ Both spraying and flowing were noted to be in operation in 1925,¹⁴⁶ though in 1927 the company only used cellulose to a limited degree¹⁴⁷ (probably confining it to some interior work). Whatever the extent of spraying, it is clear that in the late 1920s and early 1930s it was not used on external work at Chiswick. Double-decker bus bodies were painted largely by brush, with the external panels only up to the waist-line (ie up to the bottom of the lower-deck windows) being painted by the flow method "from something rather like a garden watering can". V-shaped troughs were placed on the floor to catch surplus paint.¹⁴⁸

At some stage by the early 1950s London Transport did adopt spraying, and at the new overhaul works at Aldenham, exterior painting was carried out by spray.¹⁴⁹ The NUVB paint shop members, however, believed that buses should still be brush painted, but the management claimed that this was impossible, especially once the number of buses going through the works exceeded 100 per week, the necessary minimum to keep London buses up to the standards of cleanliness required.¹⁵⁰

In general, repair work on buses and trams would be hampered by glass, and this would account for the slow introduction of spraying into this area. Another factor was the economics, with Crosville the Chester bus builder, informing Leyland Motors in 1927 that they had laid down cellulose plant, but were not satisfied it was a business proposition.¹⁵¹ Leyland themselves experimented with it in the summer of 1927, eventually bringing

it in later that year.¹⁵² Some cellulose spraying has already been noted at the Glasgow bus builders Cowiesons in 1930, when it was also observed at the Larkfield Bus Garage of Glasgow Corporation, while the Corporation's Coplawhill tram car works was still engaged in brush painting.¹⁵³ And, also in 1930, Weybridge bodybuilders Hoyal were still using traditional paint and varnish on bus bodies, while using cellulose on car bodies.¹⁵⁴

From the mid-1930s, synthetic paints became available,¹⁵⁵ and were used at Metro-Cammell-Weymann in Addlestone in 1937, where all bus painting was done by brush except for interior roof panels which were sprayed;¹⁵⁶ and at Brush in Loughborough in 1939 where both brushing and spraying of synthetic paints were used on bus bodies.¹⁵⁷ Brush painting remained common in the bus building industry, and at Park Royal Vehicles in 1951 the primer was applied by spray while all the other coats were brushed.¹⁵⁸

Among the factors explaining this adherence to the brush, apart from the cost of introducing spray equipment, were the scale of production, specifications from local transport authorities, and, of course, complicated livery. Thus, the livery for Manchester trams, painted at the Hyde Road Car Works, even after simplification in the 1930s, still involved "elaborate gold lining with corner transfers, and with mouldings picked out in brown".¹⁵⁹ One further significant factor was the problem, especially in the railway shops, of fume and vapour extraction.

At Acton works, the central overhaul shop for London Underground, it was reported in 1932 that "Extensive experiments have been carried out with paint spraying, but apart from experimental cars, painted with cellulose

materials, we have now abandoned the process, mainly owing to the difficulty of providing an efficient extractor apparatus for dealing with the objectionable vapours, and partly because it was found that sprayed cars did not stand up so well to the system of mechanical washing which is in use at our depots." Experiments were continuing, and some success was reported on "the modern type of steel car".¹⁶⁰ But in the mid-1960s it was still the case at Acton that "All painting, both interior and exterior, is carried out by brush, and where a car has to be stripped to bare steel and repainted, ten coats of paint are applied."¹⁶¹

On the surface railways, the LNER had already made spraying experiments at Dukinfield in 1927, and by 1932 filling was being applied there in spray form, using 2 coats instead of the 4 needed by the brush method.¹⁶² Spraying was noted by the union at Doncaster in 1928¹⁶³ and Cowlairs in 1933 and 1936. In 1933 the spray was tried on inside work and engine work, leading to the dismissal of a number of members.¹⁶⁴ By 1931 it was almost general on the LNER that ceiling panels were painted or enamelled by spray gun in the paint spray room before being fitted.¹⁶⁵ As the union had traditionally looked down on "inside painters", and had usually let other unions organise them, this development may not have bothered them.¹⁶⁶ While cellulose interior finishes became standard on LNER stock before the war, the exterior carriage work remained brushed. All new teak LNER coaches after 1923 had no colour paint on them, and were varnished by traditional methods - "experiments with sprayed-on varnish were not a success".¹⁶⁷

In 1937, 300 vehicles were painted at the LMS works at Derby with the aid of an automatic travelling spray unit. But it was abandoned on the

grounds that the capital expenditure, and operating costs, could not be justified.¹⁶⁸ With the introduction of steel-panelled coaches, some spray-painting was introduced in 1938 on stock built at York.¹⁶⁹ But the experiments were not very successful, as problems of fume extraction meant that it was too costly to introduce. After the war another travelling automatic spraying machine was tested at Swindon, this time using hot airless spraying, but it too failed to win support.¹⁷⁰

As late as 1962 in the British Railways workshops "nearly all vehicle painting was by brush application". It was "still overwhelmingly a matter of transferring the paint by a brush from the pot to the job, and surface preparation largely a hand operation." Paint spraying did come in in the next few years, but as cost factors dictated the introduction of mobile paint booths with built-in extraction, even as late as 1967, in some low-volume locomotive works, brush painting was still in operation.¹⁷¹

This slowness of technical change in the railway workshops is interesting when compared with other countries' experience. A 1926 letter in the EEF's archives from Danzig exclaimed "We are astonished to learn.....that in England one meets with all sorts of difficulties in connection with this new process and that one of the main difficulties seems to be the getting rid of the fumes". In Danzig, the practice on railway carriages and wagons was to close off the area with blinds, and have strong suction pipes every 1½ yards, as well as masks for the workmen. The German State Railways had a more primitive fumes extraction method.¹⁷²

Certainly, the tradition of brush painting died hard among those NUVB members still doing it in the post-war years. When the management of the Metro-Cammell bus works at Elmdon in Birmingham introduced the spray in 1954, NUVB members were initially reluctant to use it, and had to be persuaded by union officials, even though they were paid the skilled rate.¹⁷³

Conclusion

The cellulose revolution had totally transformed the section of the painting trade that the NUVB had traditionally organised, but only in the car and car body industries. Elsewhere, the persistence of the paint brush, often for decades, maintained the craft basis of other vehicle painting. As a result, the union found itself fulfilling three different roles in the 1930s. It remained a craft union inside non-motor car paint shops; it organised sprayers and some other paint shop workers in the car body building shops, though usually not on the skilled rate; and, thirdly, it was almost totally excluded from the car manufacturers' paint shops.

The union's general bifurcation into a skilled union in the non-mass production vehicle industries and a wider-based operatives' union in the mass production sector was a post-1945 development. But the paint shops were generally exempt from the latter process. An extensive division of labour had developed before the rise of mass production, and the union had confined itself to the top end of the trade which was revolutionised by cellulose. Consequently, when car industry paint shops were unionised, the NUVB more often than not found itself a poor relation to the TGWU.

PART 2. THE ALL-METAL BODY.

INTRODUCTION

The change from paint to cellulose as a material of production did not have an exact counterpart in bodymaking. However, there was, over a very long period of time, a change in the main material of construction from wood to metal, usually steel. This change generally took place in two distinct stages - firstly, wooden panels gave way to metal ones, though wooden framing was maintained; this stage of construction was normally referred to as "composite". Then, "composite" gave way to all-metal or all-steel.

But whereas cellulose had replaced coach paint in the car industry within a few years, the all-steel car body took much longer to supersede its "composite" counterpart. Initially, also, all-steel car bodies were built mainly in new non-union factories, while most existing car factory body shops were still producing composite bodies, though with decreasing numbers of wooden components. Outside of the car industry, there was again a different experience; the new materials of construction were introduced in the interwar period, though practice varied widely. Here, when all-metal buses and railway carriages were produced, there were many similarities with previous methods, with external metal panels often screwed on to the metal framing, as they were on to wooden frames. The more evolutionary process of change outside the car industry gave HUVB bodymakers an opportunity to establish themselves as metalworkers.

A. THE ALL-METAL CAR

"The greatest progress in body construction was as slow to be adopted as the change from varnish to lacquer was rapid. This was the very logical change from composite wood and steel construction to all-steel."¹⁷⁴

The change from all-wooden to metal-panelled wood-framed car bodies before the first world war has been briefly covered in chapter 4. It brought few problems for NUVB bodymakers, but the rise, and eventual domination, of the all-steel car body, presented the union with a very different situation.

All-metal car bodies were first produced in Britain before the first world war. BSA produced an open body of steel and aluminium in 1912,¹⁷⁵ and Sankey was another firm which produced all-metal open bodywork.¹⁷⁶ However, the main developments came in the USA. Dodge Brothers approached the Edward G. Budd Manufacturing Company for pressed steel panels to use on their wooden-framed cars, but Budd persuaded them that an all-steel car was a possibility. In the absence of large presses at that time it was necessary to join together 1,200 separate pressings, though by 1916 an all-steel open tourer was being produced in substantial numbers. Initially only open bodies were made, with Dodge Brothers being the leading user of this method. By 1917 Budd had developed a fully-enclosed all-steel 4-door saloon, but the USA's entry into the first world war delayed its commercial development.

Eventually closed bodies could be made in eight main sections, including single panels for the sides, roof, and floor. By 1922 Budd was selling its saloons in very large quantities,¹⁷⁷ making several hundred cars a day for Studebaker and Dodge at prices which Herbert Austin claimed "leave our efforts quite in the shade".¹⁷⁸ When Studebaker changed to pressed steel construction in 1923, they were able to mass produce closed bodies at a lower price than open bodies for the first time.¹⁷⁹ From that time, other American car manufacturers rapidly moved toward pressed steel bodywork. Whereas in 1922 only one out of every 12 American cars had an all-steel body, by 1926 it was more than one-third.¹⁸⁰

The initial expenditure was very high. The new dies and plant installed at Studebaker in 1922 cost some £60,000, and could not lightly be modified.¹⁸¹ One early drawback was that for the important pressings it required from six to eight months to cut the dies, but by 1928 this had been reduced to two months or less.¹⁸² To begin with, this method involved riveting as well as welding, but as the welding process became more advanced, riveting was discarded. Riveting, while very useful when dealing with heavy-gauge material, was not very practical for the thin sheet steel used in car bodies. Rivets tended to work loose and thus weaken the joints, which at best were only discontinuous. And it was a highly skilled, and therefore expensive, job to rivet thin sheet steel without affecting the contours of the panels. By the early 1930s, riveting was almost totally superseded by welding, of which there were four types used - oxy-acetylene, spot, flash, and arc. While all these methods were used, it was spot-welding that proved to have the greatest all-round utility.¹⁸³

The Pressed Steel Company

The new techniques were not long in crossing the Atlantic, though they took a number of years before they achieved predominance in body production. Citroen acquired the rights to manufacture pressed steel bodies on the Budd principle in 1924, and offered their first steel bodies the following year. But all-steel bodies had to wait their turn, as in 1927, fabric bodies accounted for 85% of all closed models sold in France.¹⁰⁴

Herbert Austin had visited the USA in late 1922 and was "much impressed with the wonderful results obtained by the Budd Manufacturing Company".¹⁰⁵ But it was William Morris who was responsible for bringing pressed-steel body technology into Britain. After a visit to the USA in 1925, Morris decided that the all-steel body had come to stay. But, rather than following Citroen, Morris arranged that the Edward G. Budd Manufacturing Company, Morris Motors, and J. Henry Schroeder & Co. should finance and establish a separate company - the Pressed Steel Company. Morris put up £300,000 in shares and £200,000 in debentures. Morris Motors was also issued £200,000 in ordinary shares, credited as fully paid, "in consideration for its goodwill, for advisory services, and a supply agreement on a cost-plus basis." Budd had the controlling interest in Pressed Steel, which was given the sole right to operate the parent company's patents and processes in Great Britain.¹⁰⁶

Work started on the Cowley site early in 1926. One of the greatest problems was transporting the very heavy presses, one of which, weighing 245 tons, was the heaviest individual item ever carried to that date by the

Great Western Railway. By the end of the year the buildings were finished and about 60 presses installed. Production started immediately, despite the fact that the 500 workers initially employed had to be trained to operate "types of machinery hitherto unknown over here".¹⁹⁷ Morris had bought a set of dies, jigs and designs for two types of steel body from Budds for £120,000 to get an early start.¹⁹⁸ But, as Miles Thomas, a Morris manager, has written, things did not go smoothly at all.

"The programme for the production of the first car bodies from the Pressed Steel Company ran woefully late....[but] the...delay...was nothing like so troublesome as the appallingly low standard of quality when the first output did begin to come off the line. The great dies that are put into the presses to shape the parts should be tried and fettled over a long period of time until they are exactly right. Mostly they have to be laboriously finished by hand to get the correct degree of stretch in the sheet metal.

"The Pressed Steel Company in 1926/27 were using raw dies, the labour was new and unpractised, the American techniques of welding and the method of attaching the cloth upholstery to the steel bodies was new in Britain. When the first Morris Oxford bodies from Pressed Steel were mounted on chassis and pushed through to my despatch department for examination by the Morris management all hell was let loose. The panels were rippled; the aperture in the windscreen was awry and would obviously leak in the first shower of rain; the doors only fitted where they touched, and although copious supplies of circular rubber tube filling had been sewn inside the upholstery to give the doors some semblance of fit, the whole thing was an

impossible product. To heighten the gloom, someone wryly said we ought to advertise it as an all-weather body - it would let all the weather through."¹⁸⁹

Morris had to then wait "during the long toilsome process" while the Pressed Steel management dealt with the problems "until they could produce some bodies worthy of the name".¹⁹⁰ The immediate result was that the majority of the 1927 type Morris Oxford tourers and saloons were built with conventional wooden frame bodies. One of the Pressed Steel Company's problems was the poor quality of the sheet steel it was using. It had a poor surface, which made finishing difficult, and its ductility was so low and so variable that designs had to be of limited draw. The quality of sheet steel improved rapidly enough for the panels of the 1929 Morris Cowley to be much more deeply drawn.¹⁹¹

An Autocar correspondent visiting Pressed Steel late in 1927 was told they were producing 100 bodies a day, and was impressed by "their appearance, fine finish, and luxurious interior".¹⁹² Generally, the 1928 Morris Oxford tourer and saloon had pressed steel bodies,¹⁹³ but William Morris did not put all his eggs in one basket. The 1929 range of Morris Oxford cars introduced a fabric saloon, taking trade away from Pressed Steel;¹⁹⁴ and the Morris Minor, officially unveiled in August 1928, had a fabric top - to save tooling costs and time.¹⁹⁵

Pressed Steel, in theory, was not tied solely to Morris production, as its commercial freedom to trade elsewhere had been specifically retained. However, there were two directors of Morris Motors on its board, making it

almost impossible to get business from other car firms,¹⁹⁶ though it did press body panels for at least one other British manufacturer for the 1929 season.¹⁹⁷ Similarly, Morris found other pressings manufacturers unwilling to quote competitive tenders. One, for example, made it plain that there was no reason to make a serious quotation when Morris was probably only concerned to check the prices Pressed Steel were charging. The close connection of the two firms was in neither's interest, so in 1930 Morris Motors surrendered its shareholding and its two directors resigned.¹⁹⁸

While Morris Motors probably remained the largest single customer of Pressed Steel through the 1930s, it made sure it was not totally dependent on that source. The Wolseley Messenger and the Morris Isis, introduced in 1929-30, both had Pressed Steel bodies, the Isis being produced until 1935.¹⁹⁹ For the Morris Minor, however, while Pressed Steel built the chassis and did most of the drilling on it, they did not build the body. They supplied the large metal panels for the saloon version, and blanks for other irregularly shaped pressings. The Morris factory's own body shop made the smaller or lighter pressings, as well as making the bucket seats, petrol tanks etc. The body was built using a wooden frame²⁰⁰ (see below for details on the changes in composite construction). In the early 1930s the Morris Commercial factory in Birmingham supplied Wolseley with a large number of pressings, giving it some independence from Pressed Steel. And in 1939, the new Wolseley 10 hp saloon body was welded together in the Wolseley factory from fairly large pressings fixed on timber frames.²⁰¹

The Morris 8 of 1934-38 had a Pressed Steel body, as did the integrally constructed Morris 10 of 1938.²⁰² With the trend toward all-steel

construction now firmly established, especially with unitary construction, Morris found it necessary to secure its own sources of supply.

Consequently, Morris Motors Pressings Branch was established in 1939 on land next to the Wolseley factory in Birmingham. In 1945 it became known as Nuffield Metal Products, and later built the post-war Morris Minor saloon from 1949 to 1970.²⁰³

A number of other companies started using Pressed Steel for all-steel and steel composite saloon bodies. For firms with small market shares, the cost of such bodies was relatively high, but could be reduced by shared pressings. The Rover Company got Pressed Steel to build, paint, and trim an all-steel body, the Rover 10, in 1930. The '10' Special shared the same basic shell.²⁰⁴ Meanwhile, Pressed Steel produced the Hillman Wizard body, launched in February 1931,²⁰⁵ and also started work on the new Hillman Minx, which was produced from early 1932. This had pressed steel panels on a hardwood frame.²⁰⁶ One motoring historian has written: "if you think that Spencer Wilks [of Rover] might have done a deal with his old employers at Hillman, so that the '10' Special could share body panels from the Hillman Minx....you would be right. He had pleaded poverty over the cost of unique press dies. Quite a bit of this sort of standardisation went on in the 1930s to keep down costs, but you could be sure that neither Rover nor Hillman would ever admit to it."²⁰⁷

Not only cost pressures forced this on firms, but also the nature of the market. Almost all of the quantity production car makers of the 1930s chose to improve their market position "by ensuring that their cars were as much alike as the opposition's products as possible....Nowhere was this more

obvious than in styling trends and the fact that big companies like Pressed Steel were not above selling the same skin panels to more than one customer did not help."²⁰⁸ Apart from the Rover 10 and the Hillman Minx of the early 1930s, the Singer 10 and the Hillman Minx of the late 1930s were uncannily similar. And "the Singer Bantam might have had a different body shell from the Morris 8 of 1934-38, but it needed an expert to tell them apart at 20 paces."²⁰⁹

The development of Standard's body sourcing in the 1930s shows the importance of the big steel body producers. In the early 1930s, Standard coachbuilt most of their own bodies, producing three basic types - one for the Little "Nine" and Little "Twelve"; another for the Big "Nine", Big "Twelve", and 16hp chassis; and the third for the 20 hp car. The wooden body frames were built and assembled at Canley, while the steel pressings were bought in from outside.²¹⁰ Fisher & Ludlow in Birmingham were the initial supplier, with Standard negotiating for a minimum of 3,000 sets of panels for the 1930-31 season,²¹¹ though Pressed Steel was also probably used later. At some stage in the mid-1930s, Standard also used Briggs to supply bodies for one of their models "complete in the white". Not only did they later charge Briggs for rectification work necessary on receipt of the bodies, but they claimed Briggs did not supply the numbers agreed and were successful in claiming some compensation from them.²¹²

At the 1935 Motor Show the new "Flying" Standard range was announced, with all-steel bodies supplied complete from Pressed Steel. Initially, it appears there was only one body shell, but this was supplemented early in 1937 by an alternative 4-window notchback touring saloon. In that year,

Fisher & Ludlow produced dies and duplicate assembly jigs for the 9hp and 10hp models. And in 1938, a Flying 8 was added to the range, with a body supplied from a new Fisher & Ludlow factory built at Tile Hill, near Standard's Canley factory.²¹³ (Interestingly, it was disclosed in 1937 that Standard's managing director, John Black, was, along with another director, a shareholder in Pressed Steel, while the works director was a shareholder in Fisher & Ludlow.²¹⁴) During the transition period between 1935 and 1938, after which all their new body requirements were met outside of Coventry, Standard presumably carried on coachbuilding some of the early 1930s models until they were completely displaced. Certainly, the 1935-36 factory reorganisation left it with a sawmill (which had been re-equipped in 1932), press shop, and body panel shop.²¹⁵ In the early post war period, from 1946 to 1949, some 4,500 Triumph Roadsters, with aluminium panels on an ash frame, were the last cars to be bodied in the Canley factory.²¹⁶

The other Coventry large-scale mass-producer, the Rootes group, were, as noted above, reliant to some extent on Pressed Steel in the early 1930s. By the mid-1930s, Pressed Steel were building, painting and trimming an all-steel Hillman Minx in very large quantities. While Humber continued its production of coachbuilt larger cars, and Hillman also produced bodies for larger chassis, a sizeable proportion of Rootes's bodywork had been contracted out to Pressed Steel.²¹⁷

Even the relatively self-sufficient Austin factory was not immune from the need to use outside capacity to produce steel bodies. Austin had a long history of its own developments in this field. A very large press shop had been built at Longbridge before 1920,²¹⁸ and it had made its own all-steel

bodies as early as 1926 on the Austin 12 and 20 models. An all-steel frame was spot-welded and riveted together, side panels were riveted on, and other large panels were either riveted, bolted, or welded.²¹⁹ However, the company needed to use Pressed Steel to make the metal saloon for the new Austin 12/6, brought out early in 1931, though, of course, they still built other bodies on the 12/6 chassis,²²⁰ and the new Austin 10 of 1932 was built entirely at Longbridge.²²¹ Late in 1932, Herbert Austin complained that the bought-out bodies from Pressed Steel "were not entirely satisfactory", and he wanted to terminate the contract with them. But, first of all, money had to be spent on more press plant.²²² A few months later, Engelbach was arguing that even more newpresses were required to reduce the amount of handwork in the body shops, thereby reducing costs and improving the quality of the work turned out.²²³

While Austin had been moving toward all-steel bodies for a long time, he had not entirely abandoned coachbuilt models, and in the early 1930s built a new timber store and sawmill.²²⁴ The 1934 strike at Pressed Steel (see chapter 8) forced Austin to evaluate his long-term body-building strategy. "1,000 bodies a week were lost to the industry just 4 weeks before show stocking of the new models" as a result of the 2 week strike. Within a few months Austin decided to begin work on a new press shop at Longbridge.²²⁵ The original estimates for this had to be revised upwards by Engelbach, in order costing a further £50,000 to acquire 13 more presses.²²⁶ Two years later, the firm took advantage of an expansion of toolroom capacity to order 3 presses specifically for "try-out" purposes, thus relieving pressure on existing press shop capacity.²²⁷

Austin could not afford to entirely abandon Pressed Steel, and they were still producing bodies for him in 1939.²²⁸ The new 8hp body of that year was designed in detail by Pressed Steel who manufactured the dies; it had as many common pressings as possible with the rest of the Austin range. Pressed Steel were contracted to build the body, and probably paint and trim it also. All Austin's other bodies in 1939 were built at Longbridge, the largest ones probably being of composite construction.²²⁹

Pressed Steel was therefore building bodies in 1939 for four of the "Big Six" - Austin, Morris, Standard, and Hillman (as well as producing some pressings for both Ford Commercial and Vauxhall).²³⁰ Ford had its bodies built by Briggs, which avoided total dependence on Ford, and supplied bodies also to Standard, Riley, and Daimler. (After the war, Briggs' second biggest customer was Jowett of Bradford, for whom they supplied painted and trimmed body shells from a factory established in Doncaster during the war.)²³¹ Vauxhall, therefore, appears to have been effectively the only volume car manufacturer to be a self-sufficient body producer. When they introduced unitary construction for the 1938 season, their new body shop was known as the "million pound shop", because the process was so expensive.²³² Generally the Pressed Steel Company was responsible for very big shifts in the location of body production in the 1930s, especially affecting the body shops of Rootes and Standard in Coventry. This was compounded by the fact that "from the outset, half the output" of bodies built at Pressed Steel were also painted and trimmed there.²³³

Among the medium-sized producers using Pressed Steel, Rover and Singer have already been mentioned. The Rover 10 body was supplied in ready

painted and trimmed form, and sent direct to the Tyseley factory in Birmingham, being the only pre-war Rover that had no work done on it in Coventry. In 1938-39 this was replaced by the P2, also with a Pressed Steel body.²³⁴ After the war, as well as the P2 model, Rover's other basic body was assembled from bought-out panel sub-assemblies with wooden parts in its new Solihull factory.²³⁵ These remaining pre-war models were replaced briefly in 1948-49 by one model, the P3, whose panels were supplied by Pressed Steel but assembled by Rover.²³⁶ The P4 of 1949, Rover's only car until the late 1950s, had a Pressed Steel body shell, though aluminium alloy doors, bonnet and boot lid were added at Solihull.²³⁷

Singer coachbuilt its own bodies until the Singer Bantam, introduced in 1935, had steel bodywork combined with wooden framing, Pressed Steel supplying the pressings.²³⁸ (From the late 1930s until after the war, Singer coachbuilt the "Roadster" with aluminium panelling.²³⁹) In 1939, Pressed Steel was also producing pressings for M.G., Wolseley, and Morris Commercial in the Nuffield group, Humber, Talbot and Commer in the Rootes group, and Daimler. At the beginning of that year it claimed its average yearly output included 145,000 bodies, and 16,000 composite panel sets, compared with the 1938 industry total of 341,000 cars produced.²⁴⁰

Composite bodies

While this section has concentrated on the pressed steel body, a large number of steel-panelled "composite" bodies were also produced. In the inter-war period the three metal-panelled types of body construction were the coachbuilt, the composite, and the pressed steel. The coachbuilt method

continued traditional horse-drawn carriage techniques, whereby the strength of the body came from its ash framework. In the pressed steel method, the panels provided the strength. Between the two was the "composite", which combined features of each, but was in a state of evolution, away from the coachbuilt and towards the all-steel.

In the mid-1920s, the traditional heavy wooden frame of the more expensive coachbuilt bodies was already changing. It had been the practice to use heavy timbers for the bottom of the body frame. These carried the flooring, and formed a connection between the body and the chassis, but accounted for about 25% of the total body weight. Many coachbuilding firms, including Hooper, Barker, and H.J. Mulliner, changed to a special light steel body frame which formed the connection between the main body framing and the chassis.²⁴¹ About the same time, there was, for different reasons, a change of material in the front screen pillars of the closed car. Instead of wooden pillars, sometimes 5-6 inches wide, they were replaced by metal up-rights about 1 1/4" wide to reduce the "blind spots" on the car.²⁴²

Initially, composite bodywork was seen as differing from its coachbuilt counterpart not in terms of construction, but in the fact that quantity production of wood-framed bodies necessitated pressed metal panels instead of hand-beaten ones. But by the late 1930s the composite body had moved toward the pressed steel type, in that the panels provided most of the strength, and where timber was used it was more to assist assembly and the attachment of fittings than to provide rigidity. Even where an extensive ash framework was used it was common practice for the assembled timber structure to be applied to the pressed steel panel rather than vice versa.

Thus, with the exception of a number of quantity-produced aluminium panelled bodies, composite bodywork was moving toward the elimination of wood as a structural material. In fact, complete pressed steel units, such as scuttles and boot lids, were found on so-called composite bodies. On some bodies in the 1930s the scuttle and doors of a standard all-steel body were used, but with mouldings to make them look different.²⁴³

While Pressed Steel pioneered the pressed steel body in Britain, Fisher & Ludlow of Birmingham started to make panels and dies in 1929,²⁴⁴ and had by 1930 developed a method which fitted the circumstances of the British market, where bodies were built in comparatively small quantities, and where there was a desire to change design frequently. They assembled open or closed bodies over a light wooden frame, reducing the tooling time by 60%. Compared to a panel-beaten body the wooden frame was simplified, and as the pressed steel panels were designed to take the place of many wooden members and were very strong, the frame could be made from cheaper wood than ash.²⁴⁵

When Ford introduced its Model A at its Manchester plant in the late 1920s, it had a pressed steel body,²⁴⁶ but with the move to Dagenham, and a new model range, wood was reintroduced. The bodies were now built in the adjoining Briggs factory; An extensive wood mill, comprising 138 machines, dealt with an average of 25,000 to 30,000 ft of timber a day in early 1934, there being a total of 47 different body variations of the model range. Wooden components from the mill were carried to the section for framing the doors and sub-sections of the main frame; these sub-assemblies were completed with panels. Along with three all-metal sub-assemblies, which had

previously been riveted up and welded, the various completed sub-assemblies were then united together in more elaborate jigs. It is clear that despite the extensive use of wood at Briggs, the bodies were not in any meaningful sense wooden-framed.²⁴⁷

Wood remained a body material on some models for a considerable period after the second world war, but by then it had been effectively eliminated from mass production models. A major factor in its continued use was that tool expenditure for low volume bodies was reduced by using 'steel panels of a relatively small area applied to a timber framework. Its users were generally confined to the specialist coachbuilding firms, and those companies producing special small volume models. For example, Thrupp & Maberly built bodies for Humber Pullman limousines and Humber Imperial saloons for a number of years after the war, using a framework of small hardwood members connected by light metal plates.²⁴⁸ As explained in chapter 5, the virtual elimination of the car chassis by the early post-war period knocked out the market for special bodies on mass-produced chassis, consequently further weakening the already small demand for woodworking skills in the car industry.

The specialist producers and steel bodies

Even in the 1930s, all-metal bodies were, surprisingly, not the sole preserve of the high volume producers. For example, SS, the name Swallow took when it went into car manufacturing, decided to build its own all-metal body in 1937. Rubery Owen made the doors and roof, Sankey of Wellington the quarter panels, and Pressed Steel and other firms supplied

various pressings. But when the body was assembled it would not fit together. It took several months before the problems were sorted out and production proper started in the spring of 1938. Although the company still coachbuilt some models, one consequence of this shift to all-metal was that experienced metal workers, in particular lead-loaders and dingers, were now needed and many were recruited from the Briggs plant in Dagenham.²⁴⁹

Another firm that built its own metal bodies was the London coachbuilder Park Ward, who patented their all-steel coachbuilt body in 1933, and by 1937 were "in large-scale production" for the 4½ litre Bentley chassis, as many as 10 bodies a week going through their works.²⁵⁰ Barkers had also adopted the system to a lesser extent in the late 1930s.²⁵¹ This all-steel coachbuilt body was, according to Automobile Engineer, better described as "built-up all-metal".²⁵² A major reason for its adoption was that it eliminated the problem of body noises, squeaks, and rattles, caused by the timber members expanding in damp conditions, and which represented a high proportion of rectification costs borne by the coachbuilder.

Automobile Engineer noted that there was a scarcity of craftsmen bodymakers, due mainly to the absence of facilities for training them. The future was with metal and with engineering principles rather than coachbuilding craftsmanship.²⁵³ The type of labour to build the Park Ward bodies was a matter for argument in early 1936, the manager believing that metal workers should do the job, while the NUVB shop committee argued for bodymakers. National officials then met the management and "laid claim to perform all work on the body, receiving the parts from the metal shop in

the same manner as wood sections come from the Mill and assembled by our members." The NUVB was successful in this instance.²⁵⁴

Rolls Royce and Bentley had the majority of their inter-war annual average of 1,500 bodies built at Hooper, Park Ward, Barker, Windover, Thrupp & Maberly and other high-class coachbuilders.²⁵⁵ In the late 1930s, the cost of a Park Ward unpainted and untrimmed all-metal Bentley body shell was £70, and they were producing 300 per annum. Rolls Royce looked at alternatives to this and tried to cost them.

Table 6:1 Rolls-Royce costing of alternative metal bodies

Body 'A' - all-steel front end and centre pillars die-pressed, panels semi-pressed by hand and reinforced with timber.

Body 'B' - all-steel front end and centre panels, all panels die-pressed and reinforced with timber.

Body 'C' - all-steel shell.

<u>Body</u>	<u>Tooling Cost</u>	<u>Cost per Body</u>	<u>Saving per body over Park Ward.</u>	<u>Minimum number necessary to recover capital cost.</u>
'A'	£20,000	£42.50	£27.50	727
'B'	£55,000	£36	£34	1600
'C'	£76,000	£28	£42	1800

Lloyd argues that it was therefore much cheaper for Rolls Royce to jump right through to Body 'C'. If they had adopted Body 'A', then the increase in output necessary to justify scrapping existing dies and adopting Body 'B' at a cost of £55,000 and a saving of £6.50 a body, would be 8,400.

Similarly, a move from Body 'B' to Body 'C' would necessitate an increase in output of 9,500 bodies.²⁵⁶

During the war, Rolls Royce plumped for Body 'C'. They felt that coachbuilt bodies would be doubtful in quality, that probably a maximum of 60% of the "ageing craftsmen" who could build "one-off" bodies would survive the war, and consequently, the quantities of bodies would be too low to build an economical number of chassis annually. Discussions with Pressed Steel revealed that the cost would be £250,000, but each body would cost about half what a post-war Park Ward would cost. And as the surface of the pressings was now so good, less work was needed before painting. The cost of the tooling meant that at least 5,000 bodies of exactly the same design would be needed to benefit from the cost reduction. "This seemed to conflict entirely with the pre-war assumption that most Rolls-Royce owners preferred to buy custom-built coachwork as an expression of their own individuality." But as one manager put it, "we had no alternative but to buy these tools or go out of the automobile business".²⁵⁷

Conclusion - Effect on the NUVB

Unlike the situation in the bus and railway carriage industries where all-metal body production came in to the same factories and workshops which had built all-wooden and/or composite bodies, in the car industry pressed steel car bodies were generally built in completely new, and non-unionised, factories. The main exceptions were Austin and Vauxhall, but by the time steel bodies were built in these factories, the NUVB had little, if any, membership or organisation in their body shops. NUVB bodymakers in the

Coventry factories saw their traditional jobs threatened as an increasing proportion of the growing numbers of Coventry cars were bodied elsewhere. At the same time, those car bodies still built in Coventry generally needed a diminishing input of woodworking skills, and more metalworking skills. How the Coventry branch tried to cope with this is analysed in chapter 8.

The big new steel body shops were in the Pressed Steel factory at Oxford, the Briggs factory at Dagenham, and, after 1945, Fisher & Ludlow at Castle Bromwich,²⁵⁹ as well as smaller shops such as Nuffield Metal Products in Birmingham, and British Light Steel Pressings in Acton (a non-motor industry press shop, founded in 1930, which started to manufacture body shells when purchased by Rootes in 1937).²⁵⁹ It was in these centres, in particular, that the union would have to organise if it was to retain its claim to organise body shop workers. Why it failed to do this in Oxford, and how the TGWU succeeded there, is also examined in chapter 8.

But the threat was not just from the TGWU. Referring in 1937 to the enormous development of metal pressing shops in the Midlands in the previous year or two, NUVB Midland organiser John Francis reported that "certain metal working unions" had tried unsuccessfully to get NUVB members removed from metal bodymaking finishing operations in Coventry. Two years later, he argued "It is not difficult to understand that the Metal Workers' Unions, seeing that some of their members are engaged in making the dies for power pressing, and others are employed in welding the pressed section together, in those factories which are apart from the ordinary motor car shops, should conclude that wherever the steel sections are assembled and welded, their members should do the work."

In true craftsman style he rejected their claims, "Vehicle Building, whether in wood or metal, is as much the proper province of our members as ever it was". But he went further, and discussing the situation generally with steel buses, railway carriages, and cars, he concluded, "What is needed is that our members shall fully realise the importance of this matter and shall lose no opportunity of claiming their right to this work. There is little value in talking of demarcation lines; the old cry of 'wood to wood and metal to metal' no longer has any value. 'Go in and claim the job' is the modern variant".²⁵⁰

However, the only successful way that could be done was to organise on a mass basis, and not as a craft. But the union's whole structure, and its policies, were rooted in craft unionism. As a result, even when in some areas it broke away from this attitude, the craft legacy haunted it. In 1950, for example, one of the Midlands organisers reported that when a few months earlier they had been organising Nuffield Metal Products in Birmingham, they had elected shop stewards from among spot welders, but the management had initially refused to recognise them. They were told that the NUVB was not the right union for spot welders, and that it was a job for the TGWU.²⁵¹

(B) THE ALL-METAL BUS BODY

Apart from one or two earlier hand-made productions, such as the all-steel passenger body exhibited by Brush at the first Commercial Motor Exhibition at Olympia in 1907,²⁶² the all-metal bus body made its first serious appearance in Britain about 1925. It consisted of non-ferrous alloy rolled sections for the main framework members, and about 200 bodies were built by this method over the next few years, Short Brothers of Rochester, for example, developing a bus with duralumin body members. In 1929 the steel-framed bus body was produced by Metropolitan Cammell, after many years of experience of constructing all-steel railway rolling stock. Other forms of steel construction were also devised, by Short Brothers among others, and it was estimated that in the seven years following 1929 some 4,000 metal bus bodies, steel and otherwise, were put into service.²⁶³

Weymann's Addlestone works were taken over by Metropolitan-Cammell, who introduced all-metal bus construction there in about 1932.²⁶⁴ Some of the staff soon left to join Park Royal and helped them change over to all-metal work, their first metal bus being produced in 1933. Park Royal did not go into volume production of all-metal bodies for another couple of years,²⁶⁵ but by the late 1930s about half of their output was the all-metal variety, ordered by London Transport and several municipal undertakings, while most of the company undertakings (mainly under BET.) still favoured the composite body.²⁶⁶ By this time Metro-Cammell's Birmingham works were solely concerned with metal bus work, and some two-thirds of the Addlestone factory's output was all-metal.²⁶⁷

Composite construction took even longer to die out than in the car industry. One of the reasons for this was the cost to the manufacturer. To warrant the building of an all-steel body, the manufacturer had to standardise one design and adhere to it because of the expense of the die and press tools involved; and this was only possible if there was a sufficient market. For the producer of single orders or small batches, therefore, composite bodies were cheaper. Further, changes of design could be more rapidly made with composite construction. The shape of new members could be altered easily, and production started immediately. Also, in the 1930s at least, it was almost impossible to produce certain types of metal section, which, for example, prevented the metal body builder from gaining a foothold in the market for the streamlined single-deck coach.

There were varying claims for the superiority of one type of body over another when considering repair work. Composite builders argued that the operator could often produce from the raw material many of the structural parts required. The potential of fire damage was probably not significantly greater in the wood-framed body, as the all-metal body also had wooden floorboarding which would be the first thing to ignite. The main charge against the composite body was that wood had inherent problems, such as rotting, liability to insect pests, variation in density, and the failure of joints.

The protagonists of the composite body also argued that a number of factors had given composite construction a bad name. The development of public service vehicles in the inter-war years attracted new firms to the industry, and municipalities, anxious to encourage local industry, gave out

orders to firms with neither the experience nor facilities for bodywork. This resulted in a large number of inferior composite bodies being put into service. Further, attempts by transport authorities to encourage price-cutting among tendering companies again led to inferior products, often through cutting weight down too much. Finally, inferior types of ash were often used, or the wood was kiln-dried, which would drive out the sap necessary for its preservation.²⁶⁸

Eventually, composite bodywork was replaced by all-metal. Park Royal Vehicles, for example, built its last composite double-decker in 1951, leaving this work in the future to the Chas H. Roe factory in Leeds, which had been acquired in 1947. Roe acquired a reputation for its teak-framed composite buses.²⁶⁹ Having built an all-metal bus in 1934, it decided to concentrate on the market for composite buses. But it too responded to the light-weight era of the mid-1950s by merging teak-framed lower decks with aluminium alloy upper decks.²⁷⁰ Duple, a producer mainly of single-deck luxury coaches, made its first all-metal double-decker in 1950.²⁷¹

There could, however, often be a substantial amount of woodwork in the nominally all-metal bus. Park Royal Vehicles and Weymanns were jointly involved in building the London Transport RT double-decker bus from 1947 onwards, and this contained a sizeable amount of timber, which was only virtually eliminated in the LT Routemaster replacement bus of the late 1950s.²⁷² All-metal bodywork produced by Brush, before the second world war, and for a period after it, had both floors made of tongued and grooved softwood boards, covered in lino; while ceilings of plywood or hardwood were screwed to hardwood fillets in the framing, as were all outside

aluminium panels. A new patent design introduced in 1946 cut out most of this wood, the only timber being the floor-board members and two battens in the roof; the external panels on this body were pop-riveted to the pillars and rails. But at the same time, the majority of Brush's orders for the early post-war years were for composite bodies.²⁷³ In fact, of some 74 British firms producing passenger bodywork in 1957 only 9 did not still offer some form of composite construction.²⁷⁴

Construction

In the mid-1930s the NUVB was aware of the potential problems of the all-metal bus. Halliwell, commenting on the 1933 Commercial Motor Show, pointed out that there was scarcely a passenger-carrying vehicle exhibited which was not of metal construction. "This change of material for the main construction gives cause for deep thought. It is necessary to watch closely that the change of material used does not change the type of labour that has always been accustomed to do such work."²⁷⁵

Riveting was the technique usually adopted on the all-metal bus, as a 1937 description of the Metro-Cammell-Weymann patented system at Weymanns' Addlestone works shows (though at least one manufacturer had an all-welded structure²⁷⁶). The frame was assembled in units on large horizontal jigs, where the various metal members were bolted into position, before being transferred to a riveting table where pneumatic tools were used. The lower deck would be framed up and the interior panels riveted on; it would then be mounted on the chassis, and the upper saloon floor put in place. The framed upper deck, with roof already panelled, would be lowered on and

connected. The exterior panelling would then be fixed on. The main pillars of the frame were shaped in such a way that they were grooved to accommodate a hardwood fillet to facilitate panel attachment by screw. Unlike the pressed steel car, the strength of the all-metal bus was obtained in the body frame, without stressing the exterior panels; and spot welding was used only for the construction of accessory items such as seat frames and window pans.²⁷⁷

Problems with who did the metalwork on bus construction and repair were nothing new for the NUVB. The all-metal bus, however, took the whole issue a stage further. Where the union had already established the practice of doing certain metalworking jobs on composite buses, they were less likely to be displaced, especially in repair shops, where the main threat to employment prospects came from the durability of the all-metal bus. And, in manufacture, they were not confronted with new firms taking away work from older established companies, as was the situation in the car industry with Pressed Steel.

The actual practice in the various bus-building shops was that, in the absence of metalworking labour, the existing workforce of coachbuilders tended to do all the metalwork. For the erection of the frame, engineering fitters would generally be employed, presumably because they either fabricated the necessary metal sections or were already employed on other fitting work in the firm. One firm that bought in its own metal sections, actually employed coachbuilders to erect the frame.²⁷⁸

Similarly, where there was no sheet metal work department, then bodymakers did all panel fixing, as at Brush in Loughborough. This company bought in all their panel work, and only recruited sheet metal workers when they needed extra panel-fixers to meet a big order for 200 all-metal bodies from London Transport in 1935.²⁷⁹ Where a sheet metal department existed in a works, then the practice of who fixed the panels depended on whether there was wood packing in the frame to carry the panels. Where there was, then the job was one of "metal-to-wood" and the panels would be screwed on by bodymakers. Where there was no wooden packing, then the operation was "metal-to-metal" and the sheet metal worker would fix the panel by means of self-tapping screws. A similar division prevailed on the attachment of mouldings; where there was a metal to wood contact, bodymakers would do the job, but not where there was metal to metal.²⁸⁰

NUVB reaction

Two problems for the NUVB are highlighted by this review of employers' practice. The first was the introduction of semi-skilled workers on the metal assembly.²⁸¹ The second was that of demarcation with other skilled trades, in particular sheet metal workers and AEU fitters (which will be explored below when the Scottish experience is examined). Problems with other skilled workers could only be dealt with, generally, as they arose, and much would depend on the particular management's attitude to the claims of rival unions. But with semi-skilled workers, the NUVB could either try and prevent their introduction if at all possible, or, alternatively, after 1931, seek to organise them.

The situation was complicated by the existence of two types of employer - the bodybuilders, who generally did no engineering work, and who were either covered by, or followed, the coach trade agreement; and those firms either producing the complete product, or having an engineering side, who, in turn, were covered by, or followed, the EEF national woodworkers' agreement. For the exclusively bodybuilding firms, the NUVB attempted in 1936 to get their coach trade agreement to cover all types of vehicles, by inserting the phrase "wood or metal". This was aimed primarily at developments on the passenger side of the industry, but as a number of firms producing private car bodies were on the brink of moving to all-metal construction, the employers resisted the claim. They did not want to enable the NUVB to speak for whatever class of labour might be introduced on this work.²⁹² As it happened, at Park Ward the union successfully thwarted a move to bring in metal workers soon afterwards (see section A above).

The London NFVT employers then (about 1937-38) suggested to the union that they jointly inspect the operations at a number of bus and coach factories, including Weymanns, Park Royal, and Strachans, in order to classify the types of labour, being introduced on to metal bodies, within the scope of the existing agreement. A consensus was generally reached at the time, in the London area at least, that "erectors" were the equivalent of "vicemen", who were paid 3d per hour below the skilled rate, but were 1½d above brush hands and hammermen.²⁹³ This situation was not challenged until after the war (and will be explored in Section D below).

Among the engineering employers, a number of bus builders were in 1937 still only employing skilled labour, such as Crossley of Manchester,

English Electric (formerly Dick Kerr) of Preston, and Leyland Motors, and any problems experienced there would be of demarcation with skilled metalworking unions. At Brush, skilled AEU labour was employed on the erection of the steel skeleton until, despite a strike, they were displaced by semi-skilled labour in 1937. Metro-Cammell and the Birmingham Railway Carriage & Wagon Company were already employing a special class of labour, regarded as semi-skilled, on the assembly of metal work, who had been drafted over from the railway side of these contract shops.²⁹⁴

Metro-Cammell had taken over the Midland Railway Carriage & Wagon Company in 1928, and used their Washwood Heath works for bus-building during the 1930s. In 1932 the NUVB challenged the management at these works on the use of metal workers to fix wooden treads in bus staircases, and wearing plates on the treads. The organiser claimed that an interview with the management demonstrated "our claim to the greater part, by far, of the construction of the so-called all-metal bus". But the company employed three types of labour on the all-metal bus. The panels were beaten and cut by sheet metal workers; bodymakers fitted and fixed the (external) panels (the internal panels being riveted, as in the description of the M-C-W system at Addlestone above) and did any necessary woodwork; and the shell was built by "steel coachbuilders", a class of labour already making steel carriage underframes and steel wagons. The last group consisted of skilled men (on the engineering fitter's rate) who prepared the material, and semi-skilled riveters and holders-up who did the actual assembly, as was also the case at the Birmingham Railway Carriage & Wagon Company.²⁹⁵

At the Handsworth works of the latter company, these semi-skilled metal workers were recruited into the NUVB in 1935, after a policy decision by the union's Birmingham District Committee. Some semi-skilled metal workers also appear to have been recruited at the Metro-Cammell works²¹⁹⁶ (see chapter 7). When the union came up against problems of metal work on both buses and underground trains at Metro-Cammell in 1938, John Francis, Midlands organiser, argued that "nothing short of claiming the whole work of constructing the steel railway coach would enable us to 'sensibly' claim that our members should do the work in question".²¹⁹⁷ The same sentiment obviously applied to metal buses.

At Leyland Motors, skilled labour was retained on the work, but a dispute arose as to which trade should do it, leading to the company temporarily closing down the body shop in 1933. NUVB members there went on strike for a fortnight in April 1934, before winning a signed agreement giving them the work of erecting the all-metal bus body. However, the company approached members in the shop later that year and, "after protracted negotiations", secured a modification of the April agreement, that caused a wave of protest from other branches in the north west. This was not surprising, as the result of the members' concession was that vehicle builders had retreated back to woodwork. They now did all the wooden internal work (such as floorboarding), mounted the upper saloon on the lower, and the body on the chassis. They built those unit assemblies where the main operation was bolting or screwing through wooden parts, but where it was bolting through metal or hot riveting, fitters did the work. Fitters also erected the body framework and did the necessary hot riveting on it. External panels and beading were fixed by sheet metal workers, while

internal panels and moulding were shared between vehicle builders and sheet metal workers.²⁸⁸ In explaining this retreat, it can only be surmised that, with Leyland's expansion of bus work, plenty of work remained available for bodymakers, even given their reduced area of operation.

NUVB members did not always take kindly to the new work on the repair side of the industry, and in 1932, Francis had highlighted the reluctance of some Midlands members at tackling repairs on the new all-metal buses.²⁸⁹ However, much more dramatic were the demarcation problems that arose with other unions, especially the Sheet Metal Workers. In Manchester a demarcation committee was set up in the mid-1930s at the Corporation Transport Hyde Road depot, to deal with disputes between the NUVB and the Sheet Metal Workers; and northern organiser Floyd noted "This question will arise shortly in all Corporation Depots as the All-metal Bodies come in for repair from time to time".²⁹⁰ The introduction of the all-metal trolley bus in London brought demarcation problems not just at the Central Repair depot at Charlton, but also at running depots. Here the NUVB claimed "all work above the chassis", and organiser Penn commented "we have to see that our members do the job, even to the extent of being metal workers".²⁹¹

The most extreme and protracted series of demarcation disputes took place in Scotland on both bus body manufacture and repair. Here the problem did not arise with the introduction of the all-metal bus, but was merely exacerbated by it. The gradually increasing use of metal in buses threatened the livelihoods not just of bodymakers, but also, ironically, those of the traditional vehicle building metal tradesmen - the coach smiths and coach fitters.

Demarcation Battles in Scotland

"We have no desire to interfere with the legitimate work of other craftsmen, but they must be made to understand that the Vehicle Builder's function is well described by the designation, and whether panels are fixed by pins, screws, bolts, or rivets, it is the Vehicle Builder who should do same." (George Symington, NUVB Scottish Organiser)²⁹²

The line of demarcation between the bodymaker and the tinsmith had to some extent been established in Scotland in 1915 when the firm of Wylie & Lockheed had asked bodymakers to cut and shape the metal panels on Post Office vans. The bodymakers had refused to do this, as, at this time, it was not considered to be bodymakers' work, and the firm agreed to employ a tinsmith.²⁹³ This case was in the minds of both unions when a dispute arose at the Glasgow bus-builders, Cowiesons, in 1926, coachsmiths claiming that tinsmiths were doing their work.²⁹⁴ A joint meeting of union representatives considered two issues - the coachsmiths' claim to acetylene welding, and the demarcation between bodymakers and tinsmiths.

The tinsmiths conceded the right of coachsmiths to cut and bend iron, while the tinsmiths would continue to weld the joints as before on this job. Charlie Milne, Scottish EC Officer and prominent Glasgow branch committee member, pointed out that it was impossible for the NUVB to give up the claim to welding - *"as owing to changing conditions in the motor industry our smiths were now using all welding processes"*. Further, that the unions should jointly cooperate *"to prevent oxyacetylene welding from being done by cheap labour"*. The tinsmiths replied that they only claimed

exclusive rights to use the blowpipe where it was the status quo. On the other issue, the tinsmiths claimed that as "snips" were not part of a bodymaker's kit, the latter had no right to cut sheet metal. Symington agreed about the "snips", but argued that it was the custom in many shops for NUVB members to cut all plates required, though conceding that where tinsmiths were employed, they should do this. On both cases the unions agreed to accept the status quo position.²⁹⁵

While at Cowiesons in the next couple of years, the NUVB's complaints were generally against the management,²⁹⁶ inter-union disputes were breaking out elsewhere in Scotland. At the Coplawhill workshops of Glasgow Corporation Transport, the tinsmiths claimed all metal work on the back end of buses.²⁹⁷ Almost simultaneously tinsmiths claimed the fixing on of metal panels at the Scottish General Transport Workshops in Kilmarnock. NUVB organiser, Symington, argued that the line of demarcation was that the sheet metal worker did "*all cutting, beating and fitting*", while the bodymaker did "*all fixing, unfixing and assembling*". Recognising that in recent years, NUVB bodymakers in a number of shops had allowed the sheet metal worker to pin on the panels, he contended that this had happened mainly in piecework shops. The Scottish District Council resolved, wherever possible, to enforce the demarcation line.²⁹⁸

A questionnaire sent out to all Scottish branches in early 1930²⁹⁹ revealed, according to Symington, that the sheet metal worker had "*made deep inroads in performing many operations well within the skill of our members*". Outside of Glasgow, apart from Falkirk, the NUVB had retained a bigger proportion of the work. In Glasgow itself, about half of the 25

shops listed had sheet metal workers employed - the others either having very little such work, or sub-contracting it out. There were 21 sheet metal workers in 10 shops, while Cowiesons alone employed another 21. All oxyacetylene welding was done by tinsmiths, except at Cowiesons, where they shared it with NUVB coach fitters. In more than half the shops, tinsmiths fixed the panels (which the NUVB claimed as their job), but apart from that operation, there were only two small shops, apart from Cowiesons, where there was substantial tinsmith involvement in other NUVB areas. At Cowiesons the tinsmith fixed the panels, shared the fixing of the back wings with the bodymakers, and fixed and unfixed the valances. NUVB coach fitters fixed and unfixed the front wings, and unfixed the back wings, while the bodymakers unfixed the panels.³⁰⁰

At this stage, however, the two unions were still generally on good terms, with the Sheet Metal Workers supporting the NUVB during a dispute at Cowiesons in 1930; and the NUVB engaging with the Sheet Metal Workers and the Woodcutting Machinists in an active joint recruiting campaign there a few months later.³⁰¹ Two years later, an incredible battle took place between the two unions. Early in September 1932 the Sheet Metal Workers at Cowieson walked out on strike, because an NUVB coach smith was "cutting, fitting and fixing a metal pillar plate" - work they claimed as theirs. Fear of the consequences of not acting guided the Glasgow NUVB branch in deciding to "operate our constitution and organise this branch of the trade".

The branch secretary rang General Secretary Nicholson, who practically promised two or three NUVB panel beaters to fill the breach. The branch

committee agreed that all unemployed NUVB sheet metal workers and panel beaters, prepared to work at Cowiesons, should contact their branch secretary immediately. The committee also decided to consider for membership all eligible panel beaters, and that unemployed members of the branch committee should interview panel beaters applying for Cowiesons, to decide on their eligibility;³⁰² and also asked the Scottish organiser to start organising sheet metal workers in vehicle building shops.³⁰³

By late September, there were 3 NUVB panel beaters in the shop, and another two were accepted into membership. But a Sheet Metal Workers' picket had stopped 4 "flat workers" from going in. Another 2 panel beaters had joined the NUVB by early October, while 2 panel beater members of the Coppersmiths' Society had started work there, and taken out membership of the NUVB Industrial Section, while retaining their own card. The Scottish organiser and the Glasgow branch president also gave the management the right to let their panel beater members work overtime under the circumstances.³⁰⁴ The situation quickly deteriorated, and when the Sheet Metal Workers' picket stopped 2 panel beaters, who were prospective NUVB members, from continuing work, it was decided to raise a counter-picket of four from the branch's unemployed members and pay them 2s6d daily.³⁰⁵

Glasgow Trades Council attempted to bring the two sides together, but some of the meetings were called off when the Sheet Metal Workers rejected the terms of reference.³⁰⁶ The Sheet Metal Workers also refused to attend any conference with either the NUVB or the Coppersmiths unless those unions' members on sheet metal work at Cowiesons were withdrawn.³⁰⁷ At one stage the NUVB offered them the chance of becoming signatories to their

Scottish agreement, but withdrew this and offered priority of replacement to the sheet metal workers on strike, once currently suspended NUVB panel beaters had been taken back. The NUVB would then give the Sheet Metal Workers equal right provisionally to work the disputed operations, while they agreed a demarcation line based on past practice.³⁰⁸

Relations worsened and reports of trouble on the picket line, in February 1933, led the NUVB to increase its counter-picket to 6, and then, unsuccessfully, to suggest a mutual withdrawal of pickets.³⁰⁹ When in mid-March, Cowiesons wanted another panel beater, the NUVB branch committee accepted into membership a panel beater they had recently refused a card - but only on the understanding that if Cowiesons took him on, he would be the first to be paid off in the event of any panel beaters being discharged.³¹⁰ When, in late March the firm took on a Sheet Metal Workers' union member as a supervisor, the NUVB members unanimously agreed to strike the next day if he was not removed. The stoppage occurred, lasting approximately "eight minutes" before the management conceded,³¹¹ and probably convinced the Sheet Metal Workers of their weakening position. By the middle of April 1933 both picket lines had been withdrawn, after more than six months. The NUVB informed Cowiesons that Sheet Metal Workers' union members could be started, if not prejudicial to their own position in the panel beating department; and the Sheet Metal Workers tacitly accepted the NUVB claim that both unions had a mutual right to perform the disputed operations.³¹²

Two years later, in 1935, Symington claimed that the NUVB's actions at Cowiesons had ensured that, with the firm now starting to produce an all-

metal body, the bodymaker would not suffer. But strike action was necessary to defend this position. New machines for "fabricating and welding" sheet metal were installed, and several non-unionists employed on them. NUVB members struck to compel their dismissal, arguing that as the innovation was superseding work previously done by them, they should have the right to work the machines. But after about ten days, the Sheet Metal Workers' Union organised the non-unionists. The employers' association, the SNVBA, was brought in, as was the Ministry of Labour, and the non-unionists eventually removed. Further trouble with the Sheet Metal Workers flared up again later that year, with the Scottish TUC's arbitration coming out against the Sheet Metal Workers' action.³¹³

In the mid-1930s, the area of inter-union conflict in Scotland shifted from the manufacture of composite and all-metal bus bodies to their repair. A 3-week strike in 1935 at the Central S.M.T. Company Workshops in Motherwell, won union recognition, and was followed by the union's right to repair metal bus bodies, and the return of certain operations to bodymakers from the Sheet Metal Workers.³¹⁴ More serious for the NUVB were the problems at the Glasgow Corporation Transport Department Workshops which were to drag on for years. A dispute arose in 1934 at the Larkfield bus workshops as to whether bodymakers or sheet metal workers should fix a certain part. To the NUVB's disgust, arbitration by the Scottish TUC awarded the cutting of holes to the Sheet Metal Workers, but stated "That this decision must not be taken to modify the established practice of the Vehicle Builders to bore holes through metal."³¹⁵ Further demarcation trouble then nearly resulted in a stoppage of work. By early 1936 the Corporation workshops were in "a virtual state of guerilla warfare",

matters having been considerably aggravated by the "all-metal" bus coming in for repair. Organiser Symington saw the trouble there and at Cowiesons as *"practically a life and death struggle, realising that if we fail, many bodymakers are going to be out of employment"*.²¹⁶

NUVB coachsmiths as well as bodymakers were involved in the demarcation wrangles. The NUVB suggested that a coachsmith be employed on angle iron framework repairs, an operation claimed by the Sheet Metal Workers. When the management agreed, they could not operate it because a third union, the Associated Blacksmiths, who controlled the smithy, intimated they would strike if an NUVB coachsmith performed any work previously done by them. The main argument was still with the Sheet Metal Workers, however, with a stoppage of work imminent several times, before the Scottish TUC were called in again. As, due to special circumstances at Larkfield, sheet metal workers had repaired damaged angle irons on composite buses, the STUC decided they should continue to do such repairs on both composite and all-metal buses while the personnel remained unchanged. But they believed it was really coachsmith's work, and that the Corporation should employ one to prevent a future problem. Initially, the Corporation refused to do so, and strike notices were tendered by the NUVB, whereupon the management offered to train in the use of oxy-acetylene welding an NUVB smith in the department who held a dual card with the Associated Blacksmiths.²¹⁷

Later in 1936, the Corporation's buses were changed over from petrol to heavy oil engines, which required forming a pocket in the front and near side panels. The sheet metal workers took most of this work when it came in, and the bodymakers retaliated by doing some sheet metal work. The

manager proposed a line of demarcation, but NUVB members rejected this and, when they threatened industrial action, the management modified their position to the complete cutting operation (drilling excepted) being carried out in alternate weeks by the Vehicle Builders and the Sheet Metal Workers, until such time as the two unions arrived at a common understanding on the procedure to be followed.³¹⁸

Inter-union relationships went from bad to worse in 1937, both unions being censured by the STUC for poaching ex-members of the other union; and then the NUVB formally withdrew from a Joint Working Agreement, alleging, among other things, that the Sheet Metal Workers had approached Edinburgh and Dundee Corporation Transport Departments to transfer to sheet metal workers operations performed by vehicle builders.³¹⁹

Relations temporarily improved, but demarcation problems recurred in 1939. By then the AEU had tried to secure the operation of assembling metal bodywork at Coplawhill.³²⁰ But while problems with the AEU persisted, they were small compared to what Symington called the "demarcation Marathon" with the Sheet Metal Workers.³²¹ In 1941 both the NUVB and the Sheet Metal Workers claimed all riveting on the assembly of all-metal buses in the Corporation workshops. When the latter union took exception to NUVB members riveting certain parts, the NUVB offered to suspend work on these operations and ask the STUC to arbitrate. This was refused, and the Sheet Metal Workers struck for a few days. Although they returned unconditionally, a state of "guerilla warfare" ensued.³²²

During the rest of the war there were strikes at two other Scottish workshops by Sheet Metal Workers trying to force managements to give them work the NUVB were doing.³¹³ The NUVB EC met Sheet Metal Workers' Union representatives in 1942 to find a line of demarcation at the Glasgow and Manchester Corporation shops, where there had also been trouble, but were unsuccessful,³¹⁴ and problems persisted throughout the war period.

Conclusion

The transition from wood to metal as the main material of bus body construction was not at all uniform. Factories moved to all-metal construction at different times, some keeping on composite work and others not; and composite bodies themselves varied widely in the relative amounts of wood and metal used. The repair shops of the bus operators reflected these differences.

With some employers keen to use semi-skilled labour where possible, and other trade unions, notably the Sheet Metal Workers, anxious to claim the increasing amount of metalwork, the NUVB faced a double challenge. The intensity of this varied. Thus, where members believed there was sufficient work for them in the residual wooden areas, as at Leyland, they reacted very differently from fellow members whose whole livelihood was potentially threatened, as in Glasgow. The strength of the NUVB response depended very much on the speed of the transition, and the presence or absence of other unions who might organise an alternative metalworking labour force.

C. THE ALL-STEEL RAILWAY CARRIAGE

Unlike the car and bus-building industries, the materials used in railway carriage body building did not exhibit a neat, if overlapping, chronological sequence of "all-wooden" to "composite" to "all-metal". The technical means for producing all-metal railway carriage bodies was available at an early stage through riveting, but the major drawback was the cost factor. This had to be set aside when the need for fire prevention dictated the introduction of fire-proof carriages on the tube railways of the London underground system in the first decade of this century.

Most railway contract shops built all-metal "cars" for the various London underground lines, as well as supplying a large export market. The railway companies, however, apart from occasional building of all-metal carriages themselves, and one very large purchase of them by LMS in 1926, were committed to the extensive use of wood in their own building and purchasing programmes. There was a gradual increase in the amount of metal used but some all-wooden carriages were still being built in the 1940s.

The historians of British good wagons point to a similar development in that the complete changeover from wood to metal in wagon underframes took 60 years. Wood was cheap, and easily worked with hand tools. Iron and steel were more durable than wood but their initial cost before the first world war was greater, while defective wooden members could be quickly renewed.³²⁵ However, after the war, supplies of good hardwood became scarcer, and therefore costlier, while the increased demand for rolled

steel sections brought down their price. But timber frames continued in use due to other cost factors. For example, shortly after grouping, the LMS re-equipped its Earlestown wagon works with expensive wood-working machinery, which committed that works to continuing to produce wooden-framed wagons, while other LMS centres were producing steel-framed ones.³²⁶

With the formation of the four railway groupings in the early 1920s, there was a substantial amount of re-equipment in the various carriage works, which would have increased the overall investment in woodworking machinery. And as late as 1936, the GWR, which had brought in composite construction much earlier than the other three companies, was still sufficiently committed to wood to purchase a very large woodworking machine to replace a significant amount of handwork that was still necessary.³²⁷

One important factor in the slow transition was the nature of the work of the railway company workshops. While the manufacture of car bodies was separated from their repair, railway companies, like bus and tram operators, provided their own repair facilities. The railway workshops' reason for existence was to repair existing rolling stock, and manufacture of new stock was largely a secondary consideration. Railway carriage bodies, like trams, had an enormously long life compared to cars or buses, and repair facilities were therefore geared toward past manufacturing techniques, and hence had to be based around woodworking skills. Any new building undertaken in the workshops had to use the equipment to hand; this situation was further compounded by the depression of the early 1930s which limited the capital available for investment in updated coachbuilding

methods.³²⁸ Finally, the pressures pushing many bus operators toward all-metal buses in the 1930s were not present on the railways.

Early "all-metal" stock

There were early experiments on all-metal stock for London underground trains, and the all-metal car, built for the Great Northern, Piccadilly and Brompton Tube Railway by the Metropolitan Company in 1904, was reckoned to be one of the first to run in Britain.³²⁹ But in 1905 the Board of Trade decreed that, because of serious fires on other underground systems, all future cars for London's tube railways had to be of metal construction. Brush started building some that year for the Great Northern and City tube railway, the only wood in them being some teak in the interior, "chiefly for ornamental purposes".³³⁰ In 1910 Hurst Nelson built 60 all-steel cars for the District Railway, which were the first ones for an underground line other than the tube lines.³³¹ And in 1914 the London, Tilbury and Southend Railway also introduced them, buying from Hurst Nelson, the Metropolitan Railway Carriage & Wagon Company, and the Gloucester Railway Carriage & Wagon Company.³³² Most, if not all, rolling stock manufacturers were involved in supplying all-steel cars for the London underground railways in the first thirty years of the century.³³³

Similar early developments on the main-line railways were also connected with electrification. Dick Kerr built a special rail car for the Lancashire and Yorkshire Railway Company to run on the Liverpool Overhead Railway. To conform to the necessary weight restrictions, this was built with aluminium fittings, and began service in 1906.³³⁴ The Lancashire and Yorkshire

Railway built its own all-metal electric stock at its Newton Heath works for the Manchester to Bury electric service, which started operating in April 1916. The cars were built entirely of steel and aluminium (the only wood in them was a trough of jarrah for the main cable from the collector to the control chamber) and remained in operation until 1959-60.³³⁵

The pattern of change

As noted above, the replacement of wood by metal took place over a number of decades. In 1958, wood-panelled vehicles still formed a substantial part of British Railways' passenger rolling stock, and it was estimated at the time that these would not be finally out of service until 1965.³³⁶ There was, however, no uniform pattern of change from wood to metal in the four railway groupings, and this can best be appreciated by looking at the experience of each of them in turn.

At the beginning of the twentieth century GWR coach bodies were constructed entirely of wood. Some 480 sq.ft of mahogany panelling was required for the standard coach, plus 780 feet of ornamental moulding - partly to cover the joints of the panelling, and partly to conform with the fashion of the day.³³⁷ However, vehicle maintenance was heavy owing to the number of split panels, whose removal and replacement also involved the destruction of the covering mouldings and their consequent renewal.³³⁸ As a result, odd steel panels were introduced on an experimental basis, to replace defective wooden ones.³³⁹ Ordinary steel or iron plates were initially tried, but these corroded badly in time, as the tannic acid in the oak framing of the body reacted with moisture to attack the plates.

This problem was solved by using galvanised steel panels.³⁴⁰ Steel body panelling was then introduced on new stock from 1910 or 1913,³⁴¹ and by 1917, the floors were made of galvanised corrugated steel sheets.³⁴²

Roof maintenance was another recurrent heavy item of expenditure, as leaking roofs led to damage to the body-framing and the carriage interior. GWR practice was to use tongued and grooved boards which were fixed on to oak roof sticks which had been bent to shape. The boards were then covered with canvas saturated with white lead and boiled oil to render them waterproof, and several coats of paint applied. In time the paint perished, and if repair was delayed until the canvas had perished and cracked, there was no alternative but to replace it.³⁴³

Galvanised steel roofs were introduced by the GWR from 1922, making them the first of the four companies to standardise steel roofs.³⁴⁴ But there was no attempt at this time to change the framing material. In 1914 an experimental coach was ordered with steel body framing as well as steel panelling, but was not completed until 1921. The company did not adopt it, probably because they felt that a wooden-framed coach, with sufficient fire-proofing, was almost as good an insurance against fire.³⁴⁵ A number of factors were put forward in 1939 as to why the GWR had not adopted all-steel coaches; these were that they were heavier, they required a greater heating surface, were liable to corrosion, and were noisier.³⁴⁶

The LMS group, however, were innovators in making a substantial order of all-metal stock from outside contractors in 1926, reputedly the first all-steel carriages, apart from the London underground, to be used in Britain.

235 3rd class coaches were ordered from four different firms - Cammell Laird in Nottingham, the Birmingham Railway Carriage and Wagon Company, Leeds Forge, and the Metropolitan. The carriages were built by two different methods, jig assembly, and direct assembly on the underframe, in order to get some reliable data on how steel coaches operated under British conditions. They were more expensive than their wooden counterparts, and weighed about 5% heavier, but lower maintenance costs were anticipated.³⁴⁷ This purchase had little effect on their own construction practice, the LMS not even bringing in steel for body side and end panelling of new stock built in its own shops until 1930; roofs and cornices were then changed to steel from 1932, but window framing remained wooden.³⁴⁸ The LMS do not appear to have built their own all-metal body until 1938-39 at the Derby works,³⁴⁹ and its other carriage works, at Wolverton, was still building composite stock in 1947.³⁵⁰

The LNER group were even slower and did not build any steel panelled stock until 1935, at Doncaster. From 1936 until 1943 only their York works built new steel-panelled stock, these being supplemented from outside contractors. But wooden-panelled stock continued to be built at both York and Doncaster, with the last teak carriages being produced in 1943, though York produced a number of deal-panelled bogie brake vans in 1945-46. The Doncaster works did not even start to produce significant numbers of steel-panelled vehicles until 1950. The LNER had purchased some all-steel stock in 1927-28, but on a much smaller scale than the LMS - some 20 carriages from the Metropolitan Company, and 34 bogie brake vans from Cammell-Laird. The coaches, as well as being slightly heavier, were also about 50% more

expensive than the LNER all-teak design, and this was the major factor in deciding not to build them themselves.³⁵¹

The fourth grouping, the Southern Railway, seems to have moved over to composite construction soon after grouping in 1923, and they quickly followed LMS in changing to all-metal carriage bodies, producing a prototype body in October 1941. While this had a steel frame and panels, it still retained a wood and canvas roof. 300 of these were produced at Lancing and Eastleigh between 1945 and 1948, by which time the Eastleigh works had gone over to totally all-steel stock.³⁵²

NUVB reaction

What was the union's and its members' reaction to these developments? In general, the introduction of metal panelling in the different workshops did not cause any particularly loud protest (there is certainly no mention of any in the union's surviving national records), possibly because metal panels would have to be screwed on to the wooden frame,³⁵³ and that would have been seen as bodymakers' work, as it was in the early 1920s at Swindon. The practice on repair work at Wolverton prior to 1949 gives an indication of the bodymakers' role there. A bodymaker inspector would mark the panels needing renewal; a bodymaker would then measure the panels required, a metal machinist would cut, drill, and punch the new panels. A fitter would finish them, and a painter paint them. The bodymaker would then release the old panel and fix the new. Where cutting a bad panel from a good panel was necessary, this would be done by a fitter; and, similarly, when a new panel was fixed, any extra fitting would be done by a fitter.³⁵⁴

Metal framing, and with it, metal to metal operations, was potentially much more threatening. Here, there was definitely an attempt by the union to safeguard its position in the railway company workshops, right from the first world war. When the Lancashire and Yorkshire Railway company started small-scale building of all-metal coaches in 1914 a deputation of Newton Heath bodymakers attended an emergency meeting of the Manchester-based UKSC executive committee which resolved that the "building up of coaches" was considered to be bodymakers' work. The NUR had apparently already laid claim to this work, and the Sheet Metal Workers were also seen as potential rivals. A few months later the Springburn UKSC branch, which covered two different companies' workshops, raised the issue of the union pressing its claim for the construction of steel railway coaches, thus suggesting the problem was also affecting them in one of the Glasgow shops.³⁵⁵

However, as is clear from the above review, it was not until just before the second world war that any of the railway companies started building all-steel carriages on a systematic basis. This gathered pace in the immediate post-war period, and the union's attempts to deal with this major change will be examined in section D below.

The situation in the railway contract shops was different. Here, all-metal construction had been a growing part of their workload since the beginning of the century. The Metropolitan Carriage & Wagon Company was already by the late 1920s producing substantially more steel-framed than wooden-framed railway carriages, though often the steel-framed ones were finished internally with wood.³⁵⁶ As discussed in section B above, this company, along with the Birmingham Railway Carriage & Wagon Company, used

semi-skilled labour on all-metal assembly operations. Cammell Laird, which only built rolling stock from 1919 till 1931 at the latest, specialised in steel work; to produce panels, one man would use a pneumatic riveting hammer, while a youth would hold up on the underside of the panel, and a boy would heat the rivets.³⁵⁷

With the rationalisation brought about by the Metro-Cammell merger, the two Birmingham firms were the main contract shops building railway carriages in the 1930s, apart from Cravens of Sheffield and the Gloucester Railway Carriage & Wagon Company. Their cost structure inevitably dictated the behaviour of their competitors in the depressed market for rolling stock. In employment terms, though, the railway contract shops, particularly in the 1930s, had only a fraction of the labour working in the railway company carriage workshops. The NUVB national leadership did not therefore perceive the need, at this time, for any national policy on steel carriages in the contract shops. Local branch organisation was relied upon to retain as much work as possible.

However, the situation in both the railway company and contract carriage shops was unlike the motor car factories, where the NUVB was generally being squeezed out of body shop work due to the major shift in the location of steel body production. The union was entrenched in most railway carriage shops, and from the late 1930s to the early 1950s was able to develop, and largely implement, a national policy on all-metal railway work, which will be covered in section D below.

D. POLICY DEVELOPMENTS

The need for a national policy on metal bodywork became pressing when the LMS Railway decided to build the all-metal coach at the end of the 1930s. The Derby branch got Halliwell to approach the Company with regard to who was to build them. The General Secretary told the EC in April 1938 that he believed "our members would have this work given to them", but asked them to treat this as "confidential for the time being".

It was established that bodymakers should erect the coaches, but there was a problem over the necessary welding, as by now welding had displaced riveting as the main method of joining metal to metal. The Derby works had a large staff of welders, and the negotiations focussed on the question of spot welding. NUVB organiser Floyd and NUR General Secretary Marchbank attended a joint meeting of bodymakers and welders at Derby in November 1938 to discuss the question of bodymakers doing the spot welding, but the meeting failed to reach agreement. The NUVB then reached a settlement with the company that bodymakers should do the spot welding. The company agreed that a number of them should take a course at the works, while the Derby NUVB branch also organised a welding class at the local technical college. By January 1939, work had started, with bodymakers being put on the job, but the NUR welders protested and it was then agreed that a certain number of coaches would be built with both bodymakers and welders doing the spot welding.³⁵⁸ Later in the year the Derby branch believed they had been "successful in claiming quite a proportion of the work" on the all-metal coaches.³⁵⁹

Reacting to these initial problems with the NUR, the NUVB executive met branch representatives from the main railway centres, in March 1939, to obtain details on all-metal construction and to instruct the members to do the work, especially the welding operations.³⁵⁰ One immediate result was at the LNER York works, where the NUVB branch decided to go in for the welding of panels, and the secretary wrote to the local education department about members going to a welding class. In July the branch formally applied to the manager for the whole of the work on steel bodies, though no progress was made on this as York were not building them yet, and there were only a few in service.³⁵¹ Then, in November 1939, Halliwell attended a conference with the GWR concerning welding operations at Swindon, where the principle was tacitly accepted that men who lost an operation should perform the welding on the all-steel coaches; and the welding issue was also raised at the Southern Railway's Eastleigh carriage works.³⁵²

After the railway shop conference in March, the EC decided to hold a special delegate meeting in September "to discuss the policy arising out of the new developments in the industry". The conference lasted two days, two representatives from each division attending along with the EC officers and the organisers.³⁵³ While "the introduction of Steel Coaches" was to be an item, and obviously meant railway coaches, the conference record only refers to "Metal Body Construction" in the light of the existing coach trade agreement, where it suggested that a schedule of work be agreed upon, and specified rates for these operations be embodied in the national agreement. It was also felt that the existing NUVB constitution "was wide enough to embrace all workers without exception engaged upon the repair and production of all types of vehicles".³⁵⁴

Welding Classes

The March 1939 railway conference had encouraged branches to arrange welding classes at technical institutes. The Manchester District Council, for example, requested the EC to formulate a scheme to assist members taking up a course of instruction in "Sheet Metal Work (including Welding)". The only area dissenting was Ireland where "With regard to bodymakers being trained to do welding, it was felt that this scheme could not apply to Eire, as the line of demarcation is strictly adhered to, and all trades highly organised, it would, therefore, be impossible for bodymakers to take up the welding."³⁶⁵ There was also growing interest in welding classes at the September meeting, and the Liverpool District Council submitted a resolution "That the EC shall reimburse our members who take recognised courses of instruction which will equip them for the changing conditions of our industry", which appears to have been accepted.³⁶⁶

In the southern area, organiser Barnett reported that by October 1939, some 150 members had visited the British Oxygen Company in three separate parties and had received a full afternoon's demonstration in welding of various types. Branches were circularised for names for a further session. Later in the year he reported that Bournemouth members had also visited BOC, and that classes could be followed at the BOC Cricklewood works, costing 10s6d per day, or two guineas a week (but three guineas if electric welding was included). In mid-1941 the LPTB Fulwell shop committee helped to re-establish welding classes at the Middlesex Technical College.³⁶⁷

There were developments elsewhere. In Scotland, places were secured for young members on welding classes run at Coatbridge, while in Glasgow it was decided that the normal Motor Body Trades courses should include training in welding for the last year apprentice bodymaker and journeymen classes.³⁶⁹ In Wigan the technical college agreed to help fix up a welding class, and the local Northern Counties company allowed their welding plant to be available for the use of NUVB members. As this firm were expecting a large War Office contract, in return they asked for the union's cooperation in supplying labour.³⁶⁹ Nationally, the executive agreed to pay the fees of anyone completing a session of welding classes, and then later decided to pay for anyone doing a second course.³⁷⁰

The All-Metal Agreement

At the union's first Annual Delegate Meeting in 1945, the EC president's address came to the heart of the matter: "In this ever-changing world of today, with the new methods of production and new materials, we cannot remain static with an antiquated technique...It will be difficult for the old craftsman to acknowledge that their coachmaking skill is being superseded, our job is to advise him to leave his glue pot and use the welding plant whenever and wherever new methods are introduced."

At this conference, Sheffield No.1 branch proposed that "bodymakers" should do "all work, including riveting and welding, on metal and composite bodies". This was amended to read "vehicle builders".³⁷¹ The EC reported to the 1946 Delegate Meeting that this resolution had been carried out "in all shops where our members are engaged". But this was qualified by the rider

that it was creating "great difficulties in all types of shops - railway, bus, and private."³⁷² The three main areas where the union attempted to implement this policy were among the bus-builders under the coach trade agreement, the railway workshops, and the railway and bus contract shops under the engineering agreement.

Regarding the 1939 delegate meeting decision on getting metalwork written into the national coach trade agreement, the union had already attempted this in 1936 (see Section B above). The war presumably stopped any effort to progress the 1939 resolution, and it was not until 1945 that the unions met the employers to define extra occupations to come under the national agreement.³⁷³ No agreement had been reached when the union claimed the bodymaker's rate for the assembly and erection of metal-framed bus bodies at Park Royal. At a national conference in August 1946 the employers offered the viceman's rate (3d below the skilled rate) for detail work and sub-assembly; and the bodymaker's rate minus 1d for final assembly and erection, except where timber components were fitted, when the full rate would be paid. This was an advance on the current position, where, as noted in section B, erectors were usually paid the viceman's rate.³⁷⁴

One month later, a settlement was finally reached against the background of a dispute at Brush (which had now transferred from the EEF woodworkers' agreement to the coach trade agreement). AEU members had been used here on the prototype of a new bus; when this went into production, their numbers had been increased, whereupon the NUVB walked out. As Brush needed NUVB labour for its composite orders (which were in the majority) it was anxious for a settlement. While the NUVB got some concessions on the Brush

question, they got what they wanted on the other two issues - the bodymaker's rate for final erection, and, a long-standing point of contention, the upgrading of the coach fitter to the full skilled rate.³⁷⁵ What became known as the "All-Metal Agreement" applied to "workmen employed on the manufacture and repair of metal-framed bodies". There were 3 grades. The first grade for "Final Erection and Alignment" would be paid the normal skilled rate. The second grade, "Unit Assembly", would be 1d per hour less (the old coach fitter's rate), and the third grade, "Detail Work", would be paid at the viceman's rate.³⁷⁶

This agreement was greeted with protest in some quarters, particularly the north-west,³⁷⁷ and at the next policy conference in 1948, an attempt to scrap the agreement was lost by about 2 to 1. The bone of contention was the acceptance of grading, something the union had traditionally resisted. Employers were reputedly taking advantage of the lower rates, and the probationary periods, to take on vice-hands rather than top-rate fitters. A joint conference of the Liverpool, Manchester, and Yorks & North-East Area Councils had voted for the ending of the agreement, and in Liverpool the union had completely resisted its introduction. Similarly, Scotland, which were not party to it, argued for its abolition. The opposition seemed confined to these areas, and it was eventually decided to try to remove the lower rates and the probationary periods in the agreement.³⁷⁸

The union's acceptance of grading had been a recognition of the fact that at several large employers (particularly in the London area), categories of labour not catered for in the existing agreement were paid a variety of rates. By signing the agreement they not only tidied this up,

but also staked the union's claim to this type of work. However, it was one thing to claim this work, but another to find the members to do it. On top of the immediate post-war problem of a shortage of skilled vehicle building labour, some members were reluctant to take on the work. At the beginning of 1950, one of the London organisers, Bell reported, "There is a definite trend for an extension of metal construction in this district, and it will require our members to take over this change of material. I can appreciate that our older members will not be keen to change over from wood, but it is essential that we should get in quickly. *Unless we do we shall be making a mistake which it will not be possible to retrieve.*"³⁷⁹

Three months later, Bell admitted that he had spent a lot of time on demarcation questions on metal-framed bodies "due mainly to the reluctance of our members to take on the work....The AEU are at all times anxious to get hold of it, and it makes it much more difficult when, after having been successful in claiming the job, I am unable to find our members who are prepared to do this work. *The change of material is rapidly spreading, and we shall be obliged to adapt ourselves to it.*"³⁸⁰

Railway Workshops

By the end of the second world war there were only 6 railway company workshops still building new railway carriages - Derby and Wolverton (LMS), Doncaster and York (LNER), Swindon (GWR) and Eastleigh (SR). In the next few years they were all eventually involved in the building of all-steel carriages, and agreements were made at each workshop on allocating the work between the various trades. Here, what had been agreed in one shop tended

to act as a precedent in another. When York NUVB branch came up against a rival claim, by NUR members in the frame shop, to build all-steel coaches in 1944, they used the Derby (LMS) agreement to win their claim.³⁹¹

Initially, however, the pace of change was slow. While Eastleigh produced all-steel stock immediately after the war, some of this continued to have wooden roofs. The LMS produced some all-steel stock in the early post-war years, presumably at Derby, but the other two companies continued building composite stock. The Swindon works even produced composite stock for the London Midland region in the first years following nationalisation of the railways in 1948.³⁹² Both the LNER works had been damaged by bombs during the war; Doncaster, bombed in 1940, built little stock until a new carriage building shop was ready in 1948, and the York carriage building shop, burnt down in 1944, was not replaced until 1947. These two works continued to build composite stock, with wooden roofs, based on pre-war LNER designs - the last such corridor stock being built in 1950, while non-corridor stock continued until 1953.³⁹³ A further factor curtailing the number of new steel coaches constructed was the severe steel shortage of the late 1940s. But in 1951, the first British Railways standard all-steel stock, with the body shell welded to the underframe, finally appeared.³⁹⁴

At Eastleigh in 1946, a division of labour was worked out on all-steel stock between the fitters, sheet metal workers, welders, and bodymakers. Most welding was carried out by welders, though it seems the bodymakers did some. What the bodymakers definitely did do was erect the various welded sections on to the underframe, do the necessary bolting and cold riveting, and hang the doors. They also bolted the top half of the block board

partitions into position. The floors of cross-boarded selected softwood were laid in the finishing shop. No reduction of staff occurred, and it was noted that "skilled woodworkers quickly and satisfactorily adapted themselves to the erection of steelwork".³⁰⁵

However, there was a serious demarcation dispute at Swindon. In 1946, an NUR official got the management to reverse an earlier decision and agree that the riveting of roof panels to the metal cant rail was semi-skilled work and should be done by Grade 2 fitters, and not by bodymakers (who had previously screwed the roof panels to a wooden cant rail). After work on the disputed coaches had been at a standstill for several months, the Ministry of Labour intervened, and the matter was referred to the TUC Disputes Committee, who found in the NUVB's favour.³⁰⁶

At Derby, a further agreement was reached in 1947 regarding demarcation between the bodymaker and the sheet metal worker, the latter only coming in to complete the final welding process.³⁰⁷ The 1949 agreement reached at Wolverton was especially significant. Here, metal machinists cut the various metal sheets to size for pillars and panels, and did any necessary drilling. The bodymakers then assembled the various members in sub-assembly jigs for welding by NUR welders, and sub-assemblies in main assembly jigs for welding, doing any necessary fitting themselves. The erection on the underframe was the bodymakers' job, apart from welding; the bodymaker doing all fitting, fixing, bolting and riveting.³⁰⁸

Once the railways were nationalised, and the main carriage building centres were actively engaged on all-metal construction, the union was

concerned about the differing practices at the various carriage works, pointing out "discussions and agreements on lines of demarcation have been entered into locally. These agreements do not run along parallel lines in all cases." At a conference in September 1949,³⁹⁹ NUVB representatives from the workshops and contract shops decided the Wolverton Agreement was the best practice to adopt, though, subsequently, Swindon NUVB went even further and secured the welding operations as well.³⁹⁰

As carriage design altered, then further disagreements on demarcation were bound to occur. In 1952, for example, the NUVB resisted an AEU claim to some of their work,³⁹¹ while at Eastleigh the NUVB approached the management regarding the welding operations.³⁹² However, the main objective of the union had been achieved, and most of the metal work was now performed by their members.

Railway and bus contract shops

The battleground in the contract shops was Birmingham. Complementary to their early post-war policy of demanding the skilled rate, the local District Committee also made a push for all the work on the all-steel buses and railway carriages. They were more successful on buses.

When pop-riveting was introduced at Metro-Cammell's new Elmdon bus-building works, it was initially given to fitters on the semi-skilled rate. But an agreement in December 1949 laid down that, where it was incidental to their normal work, bodymakers and finishers should do this at the skilled rate. The line of demarcation between fitters, on the one hand, and

bodymakers and finishers was to be the same on the all-metal bus as it was on the composite. This was rightly seen by the union as a major breakthrough after twenty years of much of this work having been carried out by semi-skilled-rated fitters. It took, however, a fortnight's strike by all members at the company's Midland [Washwood Heath] works to force the company to operate the agreement.³⁹³ Two years later, a works conference at Elmdon failed to agree the NUVB claim that all the work on the all-steel bus should be under the national woodworkers' agreement. The company then refused to operate the 1949 agreement on a new chassisless bus, but a six week strike reinstated it, and, in the process, gained the skilled rate for many NUVB fitters.³⁹⁴

The union made less progress on the railway carriage issue. The Birmingham District Committee followed the policy adopted in the British Railway workshops of aiming for the Wolverton Agreement,³⁹⁵ but the EEF had prepared itself for this challenge. Their Woodworkers' Ad Hoc Committee had already considered a similar application from the NUVB at Cravens and recommended to the Management Board that, while the interior fitting of railway coaches came under the national woodworkers' agreement, "the construction of the steel shells was normal engineering work on which it was quite permissible to employ appropriate classes of engineering labour at appropriate rates of pay".³⁹⁶

Early in 1951, with steel carriages being introduced at Metro-Cammell's Midland works, Birmingham organiser Evans declared "This is a matter we will fight to the end".³⁹⁷ Works conferences were held at both the Midland and Saltley works of Metro-Cammell, and then a local conference in August

1951. Prior to this, Metro-Cammell had written to the Birmingham engineering employers that as the NUVB carried out most operations on this class of work in British Railways shops, "this factor may be difficult for us to combat". The union clarified that it was only claiming the operations as performed in the Wolverton Agreement. Nevertheless, the company argued that it had used semi-skilled labour on this work for over 30 years, and that it had the steelwork labour available, unlike British Railways.

Metro-Cammell were aware that the claim was not purely local, as similar applications had been lodged with Cravens, the Gloucester Railway Carriage & Wagon Company, Chas Roberts, and R.Y.Pickering, as well as the Birmingham Railway Carriage & Wagon Company.³⁹⁹ However, the EEF refused to deal with it nationally, as certain firms which had "hitherto been unmolested by the unions" would become involved; they confined their role to giving advice, while the various companies had to deal with the situation locally.⁴⁰⁰ Not surprisingly, references back to works conferences brought the union no results. But the Birmingham NUVB were becoming isolated, as similar claims were not pursued any further at Cravens and the Gloucester company.

Mass meetings were then held of the members at the three Birmingham shops that would be affected when the British Railways contract for steel coaches was introduced - namely the Handsworth works of the Birmingham Railway Carriage & Wagon Company, and the Saltley and Midland works of Metro-Cammell. As the organiser commented, "When the job is introduced into the shops, that will be the signal for all our people to take a decisive action on this very vexed question".⁴⁰⁰ The NUVB executive then backed the Birmingham District Committee's wish to bring all members out at the three

works. But when the job was brought into the Midland works, there was no strike.⁴⁰¹

The union was then forced to modify its position, and claimed the work only on the British Railways steel carriages rather than all the steel carriage work that came into the affected companies. While this was an obvious retreat, the employers were still worried, and the Birmingham engineering employers informed the EEF that "the union is fighting for its existence, and would have nothing to lose by pursuing the fight to the end". They were concerned that, in the absence of a clear national policy by the Federation, there might be "some ill-considered concession" at another railway carriage builder. They had "no need to remind the Federation of the very serious repercussions which would result throughout the industry (particularly the motor industry) if any sort of success were to attend the NUVB in this matter".⁴⁰² But the issue petered out, with the union claiming that it had gained some concessions from the "Birmingham" company, and that the job was theirs apart from the building of the steel shell, which only involved a small number of workers.⁴⁰³

By the early 1950s the NUVB had generally achieved its aim of winning the right of its members to do as much metalwork as possible on buses and railway carriages. It was, undoubtedly, as George Symington had written in the mid-1930s, "practically a life and death struggle" (see section B above), but the union had survived a major change in the material with which many of its members worked.