

THE RAILWAY CARRIAGE AND WAGON BUILDING
TRADE.

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Introductory.*

The tables on pages 334 to 337 are based on returns received from firms in Great Britain whose business in 1924 consisted wholly or mainly in the construction or repair of railway carriages and wagons, and parts thereof. The number of such separate returns was 119. About 20 firms to which schedules were sent did not furnish returns, but these firms for the most part had very small establishments and they included some which had ceased operations before the end of the censal year. On the basis of the information available it is estimated that they did not employ more than 80 persons in all and that their total net output probably did not exceed £15,000. No production was recorded in Ireland in 1907 or in Northern Ireland in 1924.

Summary of results.—The following table shows the main results of the Censuses of 1924, 1912 and 1907, comparisons between the figures for the three years being subject to the qualifications mentioned in the next paragraph.

* See also the Notes on pages vii–xv.

Particulars.	Unit.	1924.	1912.	1907.
Value of goods made and work done (Gross output)	£'000	16,270	8,607	9,850
Cost of materials used	"	10,950	5,860	6,274
Paid for work given out to other firms	"	—	—	14
Net output	"	5,320	2,747	3,562
Average number of persons employed	No.	29,597	25,789	28,857
Net output per person employed	£	180	106	123
Mechanical power available:—				
Prime movers	H.P.	23,212	27,138	30,407
Electric motors driven by purchased electricity	"	40,943	8,961	(not recorded)

Qualifications affecting comparisons.—In considering the above table and the other tables in this report which show figures for different censal years, it should be borne in mind that:—

(1) The comparability of figures relating to value or cost is affected by the changes which have taken place in the general purchasing power of money.

(2) The Censuses of 1907 and 1924 extended to all firms, however small, but in 1912 firms employing not more than five persons (excluding the proprietors) were merely required to state the average number of persons employed by them in the year. According to the information so furnished, the number of persons employed in the establishments thus excluded was 31 or less than 1 per cent. of the number employed by the remaining firms, as shown in the above table. Moreover, correspondence on defects in the original returns for 1912 had not been completed when the war compelled suspension of this work. In these circumstances detailed information for 1912 is not given in the remainder of this report. The resulting errors in the aggregate figures given above are probably not important.

Value of output and cost of materials.—The figures in the above table representing the value of goods made and work done, and the cost of materials used, are the aggregates of the figures recorded by the firms that made returns, and, for the reasons explained in paragraphs (i) and (ii) on pages xii and xiii, they may over-state the value of the output of, and the cost of materials used by, the Railway Carriage and Wagon Building Trade considered as a whole. The matter is discussed on page 330, where it is estimated that the value, free from duplication, of the output of this trade in 1924 was about £16,000,000, and the cost of materials purchased from sources outside the trade and worked up into its products was about £10,700,000.

Production.

The detailed information relating to production in 1924 is summarised in Table II on pages 334 and 335.

In addition to the goods dealt with in this Report, carriages, wagons and parts valued, on a cost basis, at £21,516,000 were produced in 1924 by Railway Companies, Local Authorities, etc.* The corresponding figure for 1907 was £9,110,000.

Principal products.—The following statement compares, for 1924 and 1907, the value and (where recorded) the quantity of the principal classes of output, including not only the goods made by firms that made their returns on schedules for the Railway Carriage and Wagon Building Trade, but also similar goods made by firms (other than Railway Companies, etc.) whose returns were furnished on schedules for other trades.

Kind of goods.	1924.				1907.
	Returned on schedules for				Total. Selling value.
	The Railway Carriage and Wagon Building Trade.		All trades (excluding Railway Companies, etc.).		
	Quantity.	Selling value.	Quantity.	Selling value.	
Railway carriages :—	Number.	£'000.	Number.	£'000.	} 1,548
Of steel or iron and steel, complete (<i>Th. tons</i>)	400 (9.5)	996	450 (9.7)	1,015	
Other, complete	410	1,115	410	1,115	
Parts (except axles, tyres and wheels) .. .. .	..	409	..	429	
TOTAL—RAILWAY CARRIAGES AND PARTS .. .. .	..	2,520	..	2,559	1,548
Railway wagons and trucks :—					
Of steel or iron and steel, complete (<i>Th. tons</i>)	9,670 (97.0)	3,027	9,670 (97.0)	3,027	2,429
Other, complete	34,110	5,382	34,240	5,403	2,794
Not separately distinguished ..	—	—	—	—	89
Parts (except axles, tyres and wheels) .. .. .	..	871	..	971	—
TOTAL—RAILWAY WAGONS AND PARTS .. .. .	..	9,280	..	9,401	5,312
Railway carriages and wagons :—					
Parts and accessories, not separately distinguished .. ..	..	467	..	467	854
Wheels and axles, complete ..	<i>Th. tons</i> 24.4	643	<i>Th. tons</i> 72.0	1,861	1,466
TOTAL VALUE—CARRIAGES, WAGONS AND PARTS (EXCEPT AXLES AND TYRES)	..	12,910	..	14,288	9,180
Tramcars, complete and parts ..	..	268	..	277	624
Colliery wagons, trams and tubs ..	..	100	..	177	179
TOTAL VALUE .. .. .	..	13,278	..	14,742	9,983

* Such production falls within the scope of the report on Public Utility Services which forms part of a separate volume.

In 1907, firms were required to state their output by value only, but, in response to a request for information as to quantity, firms making 95 per cent. of the total value of railway carriages and parts stated that they made 661 complete carriages, and firms making 78 per cent. of the total value of railway wagons and parts stated that they made 32,861 complete wagons and trucks.

It should be explained, however, that the figures of both quantity and value shown for carriages and wagons represent the vehicles *completed* in the year and that the output of each class of complete vehicles is made up, to some extent, of work done in the previous year. The figures returned for individual classes of vehicles may thus overstate the output attributable to the year of return, but any such overstatements of value are corrected in the total value of the output of the trade as a whole by taking into account the value of all work in progress at the beginning and at the end of the year (see page 330).

The output of railway carriages and wagons shown in the preceding table is exclusive of the vehicles built by Railway Companies; the output returned by these companies in 1924 and 1907 is shown in the following table. It should be borne in mind that the figures of value are on a cost basis.

Output of Railway Companies.	1924.		1907.
	Quantity.	Value.	Value.
Carriages, complete	Number. 1,113	£'000. 2,431	} 4,466*
Parts of carriages (except axles, tyres and wheels) ..	..	694	
Wagons and trucks, complete	26,494	4,664	} 3,702
Parts of wagons and trucks (except axles, tyres and wheels) .. .. .	..	726	

* Including repairs.

According to information supplied voluntarily by the Railway Companies for 1907, the number of new carriages completed by them in that year was 1,796 and the number of new wagons, 20,565.

Total make of railway wheels and axles, complete.—The total output of complete railway wheels and axles in 1924 amounted to 110,530 tons. Of this output, the quantity made by railway carriage and wagon builders (see Table II A, page 334) was 62,990 tons (of which 24,420 tons were not fitted in 1924 to carriages or wagons), and the remaining 47,540 tons were made by iron and steel foundries (see page 39).

Other products.—In addition to the products shown in the table on page 328, firms that made their returns on schedules for the Railway Carriage and Wagon Building Trade also recorded the following goods which, being of kinds mainly produced by other trades, are dealt with in the reports on those trades.

Kind of goods.	1924.	1907.
	£'000.	£'000.
Railway and tramway equipment (points, crossings, tyres and axles, etc.)	92	—
Road vehicles :—		
Commercial motor vehicles	70	—
Parts of commercial motor vehicles	164	—
Machinery and machinery accessories	16	135
Other iron and steel manufactures	74	208
Other goods	2	40
TOTAL VALUE	418	383

Repair work.—The value of repair work carried out to railway carriages and wagons was returned as £2,717,000 (including £1,000 returned on schedules for other trades) in 1924 and £704,000 in 1927.

Work in progress.—In addition to the output dealt with in the preceding paragraphs the value of the work in progress at the end of 1924 was returned as £1,770,000 and that of the work in progress at the beginning of that year as £1,912,000. The former of these items represents the estimated value of unfinished carriages and wagons that were being constructed at the end of 1924; while the latter represents a similar estimate for carriages and wagons in course of construction at the beginning of the year. The difference between these two sums, £142,000, represents a net reduction of the value of the output within the censal year 1924.

Value of output free from duplication.—The gross value of the output of the firms that made their returns on schedules for the Railway Carriage and Wagon Building Trade was £16,270,000, but some duplication occurs in connexion with the value of parts and of wheels and axles. Examination of the individual returns shows that parts made by one carriage and wagon builder were not generally sold to other builders, with the possible exception of certain iron and steel manufactures, valued at about £70,000, included under *Other products* above; also, while the great bulk of the repair work was done by manufacturing firms, certain repairing firms may have bought parts to the value of £250,000 from other firms that made returns on the schedules for this trade. The value, free from duplication, of the output of the Railway Carriage and Wagon Building Trade in 1924 may, therefore, be estimated at about £16,000,000. Estimated on a similar basis, the corresponding figure for 1907 lay between £8,500,000 and £9,000,000.

Cost of materials and work given out.—The cost of materials used by firms that made their returns on schedules for the Railway Carriage and Wagon Building Trade was returned as £10,950,000 in 1924, a sum which, by the exclusion of purchases of the products of other firms in the same trade, is reduced to about £10,700,000. The corresponding net figure for 1907 was estimated as lying between £5,000,000 and £5,500,000.

The amount paid for work given out to other firms was returned as £14,000 in 1907, but no record of any such work was obtained at the 1924 Census.

Net output.—The net output in 1924 of the firms that made their returns on schedules for the Railway Carriage and Wagon Building Trade (whose gross output was valued at £16,270,000) was £5,320,000, that sum representing, without duplication, the total amount by which the value, as delivered, of the aggregate output exceeded the cost, as purchased, of the materials used.

The net output per head of persons employed in the censal year 1924 was £180 as compared with £123 in 1907.

Exports and imports.—The carriages and wagons built and the work done by private firms was mainly for export and for private wagon owners (colliery companies, coal merchants, etc.). The following table, which relates to the year 1924, shows the total production of these private firms, together with the exports and retained imports of similarly described goods.

Kind of goods.	Production.		Exports.		Net imports.	
	Quantity.	Value at factory.	Quantity.	Value f.o.b.	Quantity.	Value c.i.f.
Railway carriages :—	Number.	£'000.	Number.	£'000.	Number.	£'000.
Of steel or iron and steel, complete	450	1,015	190	277	—	—
(Th. tons)	(9·7)		(4·3)			
Other, complete	410	1,115	50	63	—	—
Parts (except axles, tyres and wheels) .. .. .	..	429	..	856	..	7
TOTAL—CARRIAGES AND PARTS .. .. .	..	2,559	..	1,196	..	7
Railway wagons and trucks :—						
Of steel or iron and steel, complete	9,670	3,027	7,670	1,258	8,710	52
(Th. tons)	(97·0)		(32·8)		(3·1)	
Other	34,240	5,403	1,300	180	770	21
Parts (except axles, tyres and wheels) .. .. .	..	971	..	1,809	..	9
TOTAL—WAGONS AND PARTS .. .. .	..	9,401	..	3,247	..	82
Railway wheels and axles	Th. tons		Th. tons		Th. tons	
	110·5	2,731	16·2	547	1·4	26

The value of the parts exported was in excess of the value of parts returned as made for sale or stock, because for convenience of shipment many vehicles are dismantled and the parts packed separately for exportation.

In the production of railway carriages, wagons, trucks, and wheels and axles the British manufacturer dominates the home market, imports being of little significance. While a precise

calculation cannot be made, it would appear from the values shown that somewhat less than one-half of the carriages and parts, and one-third of the wagons and parts, made by private firms, were exported in 1924. Taking the tonnage of complete sets of wheels and axles made as 110,000 tons, probably about 23,000 tons were exported either fitted to vehicles or separately, but the exported quantity may have been as high as 33,000 tons, according to the weight of the wheels and axles on complete vehicles exported.

Wages in 1924.

Under the Census of Production Act, 1906, the powers of the Board of Trade to require information do not extend to particulars of the amount of wages paid, and, consequently, no information on this head was secured in connexion with the Census of 1924. As a result, however, of the voluntary enquiry undertaken by the Ministry of Labour into wages and hours in the United Kingdom in 1924, information was obtained as to the total wage-bill of a group of firms in the Railway Carriage and Wagon Building Trade which made returns both to the Ministry of Labour and to the Census of Production Office. According to the Census records this group of firms employed, in the week ended 18th October, 1924, 19,142 operatives, or 76 per cent. of the total of 25,318 operatives for the trade as a whole, and their net output totalled £3,985,000, or 75 per cent. of the aggregate net output of £5,320,000 for the trade as a whole. The total wage-bill of these firms, as returned to the Ministry of Labour, was £2,770,000, representing about 69 per cent. of their aggregate net output.

Employment.

The detailed information relating to employment in 1924 is summarised in Table III on page 336. The following table sets out certain particulars for that year together with those relating to the 1907 Census. For the purpose of this comparison, the average numbers of operatives of each sex returned for 1924 have been divided between the two age-groups in the proportions shown by the data relating to the week ended 18th October:—

Average number.	Males.		Females.		Males and females.	
	Under 18.	All ages.	Under 18.	All ages.	Under 18.	All ages.
	1924.					
Operatives	3,325	26,267	54	266	3,379	26,533
Administrative, etc. ..	294	2,356	74	708	368	3,064
TOTAL	3,619	28,623	128	974	3,747	29,597
1907.						
Wage earners	3,163	26,939	62	166	3,225	27,105
Salaried	275	1,667	14	85	289	1,752
TOTAL	3,438	28,606	76	251	3,514	28,857

The numbers of operatives recorded month by month in 1924 ranged from 1,219 above the average, in May, to 1,472 below the average, in November (see Table III B, page 336).

Mechanical Power.

The detailed information relating to mechanical power in 1924 is summarised in Table IV on page 337. The following table sets out the particulars for 1924 and 1907 relating to the capacity and kinds of *prime movers* and the capacity of *electric generators* installed.

Power equipment.	1924.			1907.
	Ordinarily in use.	In reserve or idle.	Total.	Total.
PRIME MOVERS:—	H.P.	H.P.	H.P.	H.P.
Reciprocating steam engines	6,650	3,539	10,189	28,156
Steam turbines	8,820	2,000	10,820	718
Gas engines	1,674	68	1,742	1,353
Petrol and light oil engines	64	2	66	
Heavy oil engines	350	20	370	
Water power	25	—	25	180*
TOTAL	17,583	5,629	23,212	30,407
ELECTRIC GENERATORS:—	Kw.	Kw.	Kw.	Kw.
Driven by—				
Reciprocating steam engines	3,095	2,423	5,518	7,502
Steam turbines	6,468	1,500	7,968	368
Gas engine	580	4	584	298
Petrol and light oil engines	10	—	10	
Heavy oil engines	68	—	68	
Other prime movers	—	—	—	
TOTAL	10,221	3,927	14,148	8,168

* Returned as *Other power*.

The capacity of *electric motors* recorded for 1924 was as shown below:—

Electric motors.	1924.		
	Ordinarily in use.	In reserve or idle.	Total.
Driven by:—	H.P.	H.P.	H.P.
Electricity generated in own works	16,449	5,971	22,420
Purchased electricity	37,489	3,454	40,943

Corresponding information was not required for 1907. The total number of Board of Trade units of electricity purchased for power and lighting purposes in that year was returned as 1,133,000.

TABLES.

I.—Summary of results.

Note.—No production was recorded in Northern Ireland.

Particulars.	Unit.	England and Wales.	Scotland.	Great Britain.
Value of goods made and work done (Gross output)	£'000	15,143	1,127	16,270
Cost of materials used	"	10,153	797	10,950
Net output	"	4,990	330	5,320
Average number of persons employed ..	No.	27,893	1,704	29,597
Net output per person employed ..	£	179	194	180
Mechanical power available :—				
Prime movers	H.P.	22,804	408	23,212
Electric motors driven by purchased electricity	"	36,349	4,594	40,943

II.—Production.

A.—TOTAL MAKE OF COMPLETE RAILWAY WHEELS AND AXLES IN 1924 AS RETURNED ON SCHEDULES FOR THE RAILWAY CARRIAGE AND WAGON BUILDING TRADE.

Country.	Quantity.	Value.
	Tons.	£'000.
England and Wales	53,330	1,293
Scotland	9,660	219
Great Britain	62,990	1,512

B.—OUTPUT SOLD OR ADDED TO STOCK AND WORK DONE.

Kind of goods made and work done.	Unit.	England and Wales.	Scotland.	Great Britain.
Railway carriages :—	Quantity and selling value			
Of steel or iron and steel, complete	No. 400	—	—	400
	Th. tons 9.5	—	—	9.5
	£'000 996	—	—	996
Other, complete	No. *	*	*	410
	£'000 *	*	*	1,115
Parts (except axles, tyres and wheels) ..	£'000 *	*	*	409
TOTAL—CARRIAGES AND PARTS ..	£'000 *	*	*	2,520
Railway wagons and trucks :—	No. *	*	*	9,670
Of steel or iron and steel, complete	Th. tons *	*	*	97.0
	£'000 *	*	*	3,027
Other, complete	No. 29,730	4,380	4,380	34,110
	£'000 4,749	633	633	5,382
Parts (except axles, tyres and wheels) ..	£'000 *	*	*	871
TOTAL—WAGONS AND PARTS ..	£'000 *	*	*	9,280
Railway carriages and wagons :—				
Parts and accessories, not separately distinguished	£'000 *	*	*	467
	No. of sets 12,260	1,250	1,250	13,510
Wheels and axles, complete ..	Th. tons 22.4	2.0	2.0	24.4
	£'000 588	55	55	643
TOTAL — CARRIAGES, WAGONS AND PARTS (EXCEPT AXLES AND TYRES)	£'000 *	*	*	12,910
Tramcars, complete and parts	£'000 *	*	*	268
Colliery wagons, trams and tubs	" 100	—	—	100
Commercial motor vehicles	" 70	—	—	70
Parts of commercial motor vehicles :—				
Bodies	" 154	—	—	154
Other parts	" 10	†	†	10
Railway equipment (points, crossings, tyres and axles)	" 92	†	†	92
Machinery and machinery accessories ..	" 16	—	—	16
Other iron and steel manufactures	" 46	28	28	74
Other goods	" 2	†	†	2
Repair work	" 2,642†	74†	74†	2,716†
TOTAL VALUE OF GOODS MADE AND REPAIR WORK	£'000	15,216	1,196	16,412
Value of work in progress at the end of 1924	£'000	1,732	38	1,770
Less value of work in progress at the beginning of 1924	"	1,805	107	1,912
TOTAL VALUE OF GOODS MADE AND WORK DONE (GROSS OUTPUT) ..	£'000	15,143	1,127	16,270

* In order to avoid the possible disclosure of information relating to individual firms, figures are given only for Great Britain as a whole.

† Less than £500. ‡ Amount received for work done.

III.—Employment.

A.—NUMBERS EMPLOYED IN WEEK ENDED 18TH OCTOBER, 1924.

Kind of staff.	Males.		Females.		Males and females.	
	Under 18.	All ages.	Under 18.	All ages.	Under 18.	All ages.
<i>England and Wales :—</i>						
Operatives	2,989	23,762	49	243	3,038	24,005
Administrative, etc.* ..	272	2,178	69	672	341	2,850
TOTAL	3,261	25,940	118	915	3,379	26,855
<i>Scotland :—</i>						
Operatives	185	1,306	2	7	187	1,313
Administrative, etc.* ..	22	178	5	36	27	214
TOTAL	207	1,484	7	43	214	1,527
<i>Great Britain :—</i>						
Operatives	3,174	25,068	51	250	3,225	25,318
Administrative, etc.* ..	294	2,356	74	708	368	3,064
TOTAL	3,468	27,424	125	958	3,593	28,382

* Administrative, technical and clerical staff.

B.—OPERATIVES EMPLOYED IN ONE WEEK IN EACH MONTH OF 1924.

England and Wales. (Annual average : Males, 24,783 ; Females, 260 ; Total, 25,043.)

Week ended.	Males.	Females.	Total.	Week ended.	Males.	Females.	Total.
Jan. 12th ..	25,265	258	25,523	July 19th ..	24,993	272	25,265
Feb. 16th ..	25,596	261	25,857	Aug. 16th ..	24,228	256	24,484
March 15th ..	25,651	270	25,921	Sept. 13th ..	23,703	253	23,956
April 12th ..	25,686	271	25,957	Oct. 18th ..	23,762	243	24,005
May 17th ..	25,864	280	26,144	Nov. 15th ..	23,567	241	23,808
June 21st ..	25,453	282	25,735	Dec. 13th ..	23,626	238	23,864

Scotland. (Annual average : Males, 1,484 ; Females, 6 ; Total, 1,490.)

Jan. 12th ..	1,611	5	1,616	July 19th ..	1,430	5	1,435
Feb. 16th ..	1,657	5	1,662	Aug. 16th ..	1,425	7	1,432
March 15th ..	1,641	5	1,646	Sept. 13th ..	1,413	6	1,419
April 12th ..	1,594	5	1,599	Oct. 18th ..	1,306	7	1,313
May 17th ..	1,603	5	1,608	Nov. 15th ..	1,246	7	1,253
June 21st ..	1,638	7	1,645	Dec. 13th ..	1,241	6	1,247

Great Britain. (Annual average : Males, 26,267 ; Females, 266 ; Total, 26,533.)

Jan. 12th ..	26,876	263	27,139	July 19th ..	26,423	277	26,700
Feb. 16th ..	27,253	266	27,519	Aug. 16th ..	25,653	263	25,916
March 15th ..	27,292	275	27,567	Sept. 13th ..	25,116	259	25,375
April 12th ..	27,280	276	27,556	Oct. 18th ..	25,068	250	25,318
May 17th ..	27,467	285	27,752	Nov. 15th ..	24,813	248	25,061
June 21st ..	27,091	289	27,380	Dec. 13th ..	24,867	244	25,111

IV.—Mechanical Power.

PARTICULARS OF PRIME MOVERS, ELECTRIC GENERATORS AND ELECTRIC MOTORS.

Power equipment.	England and Wales.		Scotland.		Great Britain.	
	Ordinarily in use.	In reserve or idle.	Ordinarily in use.	In reserve or idle.	Ordinarily in use.	In reserve or idle.
PRIME MOVERS :—						
Reciprocating steam engines	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Steam turbines	6,242	3,539	408	—	6,650	3,539
Gas engines	8,820	2,000	—	—	8,820	2,000
Petrol and light oil engines	1,674	68	—	—	1,674	68
Heavy oil engines	64	2	—	—	64	2
Water power	350	20	—	—	350	20
	25	—	—	—	25	—
TOTAL	17,175	5,629	408	—	17,583	5,629
TOTAL OF PRIME MOVERS INSTALLED	22,804		408		23,212	
ELECTRIC GENERATORS :—						
Driven by—	Kw.	Kw.	Kw.	Kw.	Kw.	Kw.
Reciprocating steam engines	3,095*	2,423	*	—	3,095	2,423
Steam turbines	6,468	1,500	—	—	6,468	1,500
Gas engines	580	4	—	—	580	4
Petrol and light oil engines	10	—	—	—	10	—
Heavy oil engines	68	—	—	—	68	—
TOTAL	10,221*	3,927	*	—	10,221	3,927
TOTAL OF ELECTRIC GENERATORS INSTALLED	14,148		*		14,148	
ELECTRIC MOTORS :—						
Driven by—	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
Electricity generated in own works	16,449	5,971	—	—	16,449	5,971
Purchased electricity	33,210	3,139	4,279	315	37,489	3,454

* See footnote (*) to Table II B.