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Volume Author/Editor: Thor Hultgren, assisted by William I. Greenwald

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2. The Movement of Persons

Number of journeys was related to the state of business

In almost every year from 1850 to 1912, the British and their visitors took more railway journeys than they did the year before (Tables 9, 17). There were only three slight declines — 0.4 per cent from 1878 to 1879, 1.0 per cent from 1908 to 1909, and 2.4 per cent from 1911 to 1912. The first of these could be regarded as a brief eventual response to the business contraction of 1873-79, the second as a belated reaction to the contraction of 1907-08. The third cannot plausibly be paired with any phase in the reference chronology; it was probably a consequence of the coal strike in 1912. With two exceptions, then, we cannot find any specific phases corresponding with the prewar business phases[1] (monthly figures, if we had any, might show a closer relation). Growth, however, was retarded in all the business contractions except 1890-94 (Table 10). Even in that instance the average annual increase, while slightly larger than in the preceding, was much smaller than in the following expansion.[2]

After the war, the response of potential travelers to business conditions was much more conspicuous. For every reference phase, annual figures, which include the numerous routine journeys of season ticket holders, reveal a rise in the number of journeys for every business expan-

[1] There is no complete figure for 1868. But even the incomplete total shows a rise from 1867. Conceivably travel may have diminished from 1868 to 1869; 1866-68 is a reference contraction.

[2] Production of pig iron and steel ingots was smaller in 1893 than in 1894. The trough year in coal production, cotton imports, consumption of rails, tonnage of vessels entered, and tonnage cleared was 1893 rather than 1894. If 1893 is taken as a reference trough, the growth of passenger traffic per year is as follows (millions of journeys):

1886-90	23.0
1890-93	18.5
1893-1900	38.4

This single exception to the general pattern of retarded growth disappears.

TABLE 9

Number of Rail Journeys, 1845-1902 (millions)

1845	33.8[a]	1873	455.3
1846	43.8[a]	1874	477.8
1847	51.4[a]	1875	507.0
1848	58.0[a]	1876	534.5
1849	60.4[a]	1877	549.5
1849	63.8	1878	565.0
1850	72.9	1879	562.7
1851	85.4	1880	603.9
1852	89.1	1881	626.0
1853	102.3	1882	654.8
1854	111.2	1883	683.7
1855	118.6	1884	695.0
1856	129.3	1885	697.2
1857	139.0	1886	725.6
1858	139.1	1887	733.7
1859	149.8	1888	742.5
1860	163.4	1889	775.2
1861	173.7	1890	817.7
1862	180.4	1891	845.5
1863	204.6	1892	864.4
1864	229.3	1893	873.2
1865	251.9	1894	911.4
1866	274.3	1895	929.8
1867	287.7	1896	980.3
1868	304.1[b]	1897	1030.4
1869	306.7	1898	1062.9
1870	336.5	1899	1106.7
1871	375.2	1900	1142.3
1872	422.9	1901	1172.4
		1902	1188.2

[a] Years ended June 30.

[b] Incomplete: some companies failed to report.

Does not include journeys by holders of season and periodical tickets. No information on such tickets, 1845-50. Number of holders reported beginning 1851, but each holder counted as one regardless of length of time for which ticket was valid; 1851-1901, number of journeys cannot be estimated. For number, 1902-13, including and excluding holders of season tickets, see Table 17.

TABLE 10

Rail Journeys: Change per Year between Reference Years, 1854-1913

REFERENCE DATE	LEVEL OF BUSINESS	YEARS FROM PRECEDING DATE	NUMBER OF JOURNEYS[a]	CHANGE FROM PRECEDING DATE		
				Total	*Per year To peak from trough*	*Per year To trough from peak*
				(millions)		
1854[b]	Peak	....	111.2	.....	.....	.....
1855	Trough	1	118.6	7.4	.....	7.4
1857	Peak	2	139.0	20.4	10.2	.....
1858	Trough	1	139.1	0.1	.....	0.1
1860	Peak	2	163.4	24.3	12.2	.....
1862	Trough	2	180.4	17.0	.....	8.5
1866	Peak	4	274.3	93.9	23.5	.....
1868	Trough	2	[c]	[c]	.....	[c]
1873	Peak	5	455.3	[c]	[c]	.....
1879	Trough	6	562.7	107.4	.....	17.9
1883	Peak	4	683.7	121.0	30.2	.....
1886	Trough	3	725.6	41.9	.....	14.0
1890	Peak	4	817.7	92.1	23.0	.....
1894	Trough	4	911.4	93.7	.....	23.4
1900	Peak	6	1142.3	230.9	38.5	.....
1901	Trough	1	1172.4	30.1	.....	30.1
1903	Peak	2	1195.3	22.9	11.4	.....
1904	Trough	1	1198.8	3.5	.....	3.5
1907	Peak	3	1259.5	60.7	20.2	.....
1908	Trough	1	1278.1	18.6	.....	18.6
1903	Peak	....	1566.1	.....	.....	.....
1904	Trough	1	1585.1	19.0	.....	19.0
1907	Peak	3	1688.9	103.8	34.6	.....
1908	Trough	1	1711.2	22.3	.....	22.3
1913	Peak	5	1897.5	186.3	37.3	.....

[a] Journeys of season ticket holders included only in lower (1903-13) segment. Not shown for reference peak 1845 or trough 1848, since reference dates pertain to calendar, data to fiscal years.

[b] Earliest reference date for which calendar year data on journeys are available; no reference dates available on fiscal year basis.

[c] No data for 1868; no computation possible for 1866-68 or 1868-73.

sion, a fall for every contraction (Chart 8, top line).[3] The expansion corresponding to the 1921-23 reference phase was, to be sure, short and small. War conditions, severely discouraging ordinary civilian travel, prolonged and in 1940 greatly deepened the contraction after 1937. (The most rapid growth of military and other war-connected travel came after 1940.)

Monthly data, which do not include the trips of season ticket holders, fail to disclose any specific contraction in the vicinity of 1927-28 (Chart 9). But the curve is flatter in that reference phase than in the expansion before or after. And all the other reference phases from 1920 to 1938 can be matched by rises and falls in journeys. (Because we have no monthly figures before July 1920 or after April 1939, we cannot fix the beginning of the first or the end of the last contraction.)

In May 1937, many people must have gone up to London to see the coronation ceremonies; the number of travellers was enormous. Had there been no change of kings, May would not have towered so far above its neighboring months; but it or some one of them would have been a peak, and there would still have been a rise from 1932 to 1937 and a decline thereafter.

In the subways of London, the traffic of May 1937 was even more memorable. Busmen in the central area of the city went on strike. All busses in that area were completely withdrawn from service from May 1 to May 27 inclusive.[4] The combination of the ceremonies and the absence of alternative facilities created an enormous jam below ground (Chart 9). If these dramatic but transient events had not occurred, it looks as though May would have been lower than subsequent months, and we accordingly place the peak in December. Another royal ritual — a silver jubilee — crowded the underground lines in May 1935.[5] In March 1924 a strike of tramwaymen and busmen diverted a heavy traffic from the surface lines.[6]

[3] The number of season tickets is reported in terms of equivalent annual tickets, e.g. a ticket usable for three months is counted as one-fourth of a ticket. It is assumed that each annual equivalent ticket is used for a return trip on each of 300 days, i.e. for 600 journeys.

Rides on London underground railways are not included.

All figures are for passengers originating; a passenger travelling over several railroads is counted only once.

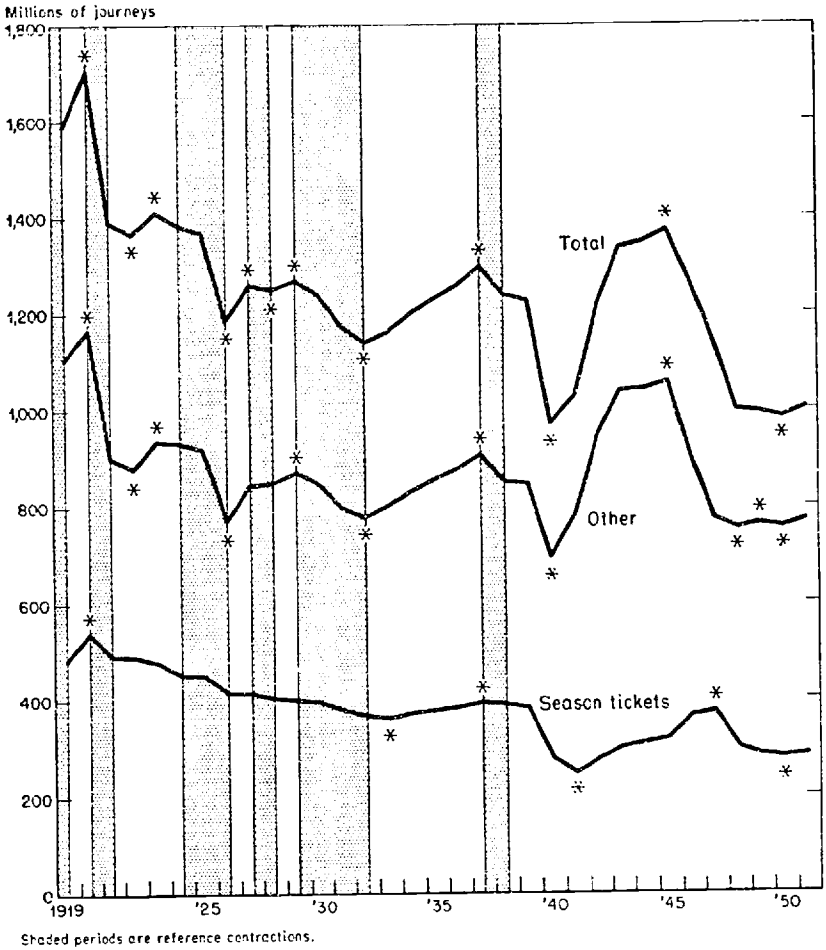
[4] London Passenger Transport Board, *Annual Report*, year ended June 30, 1937, p. 9.

[5] London Passenger Transport Board, *Annual Report*, year ended June 30, 1935, p. 25; *Railway Gazette*, May 17, 1935, p. 955.

[6] *Railway Gazette*, March 28, 1924, p. 488.

CHART 8

Rail Journeys: On Season Tickets, Other, and Total, 1919-1951



Shaded periods are reference contractions.

For the purpose of fixing peaks and troughs, we ignore the salient fluctuations that reflect these accidental circumstances. We are able to discern broader waves in the number of underground rides, which correspond on the whole to the reference chronology. Again there is no contraction in the vicinity of 1927-28; but the growth in that business contraction was less rapid than in 1926-27 or 1928-29 (Table 11). All the other reference phases can be matched with specific increases and declines. For lack of monthly figures, the starting date of the first contraction in rides and the ending date of the last cannot be fixed.

TABLE 11

London Underground Rides
Change per Month between Reference Months, 1926-1929

REFERENCE DATE	LEVEL OF BUSINESS	MONTHS FROM PRECEDING DATE	NUMBER OF RIDES[a]	CHANGE FROM PRECEDING DATE		
				Total	*Per month*	
					To peak from trough	*To trough from peak*
				(millions)		
July 1926	Trough	...	24.9	...	...	
March 1927	Peak	8	27.7	2.8	0.35	
Sept. 1928	Trough	18	29.7	2.0	...	0.11
July 1929	Peak	10	31.7	2.0	0.20	

[a] Three-month average.

Riding on trams (street cars) and trolley-busses also fluctuated with business (Chart 10).[7] From 1920 to 1929 traffic increased and decreased in rough correspondence with the reference phases. Except for a slight rise, 1935-36, however, there was no traffic expansion corresponding to the 1932-37 business expansion. But the flatness of the curve during that reference phase makes a sharp contrast with its abrupt fall in 1929-32. During the whole period from 1920, an eventually large part of the service initially provided by trams was taken over by motor busses. We would prefer to study the total of tram, etc. and bus passengers, but unfortunately no figures including the latter are available before 1932. The combined total did rise from 1932 to 1937 (Table 12, column 10).

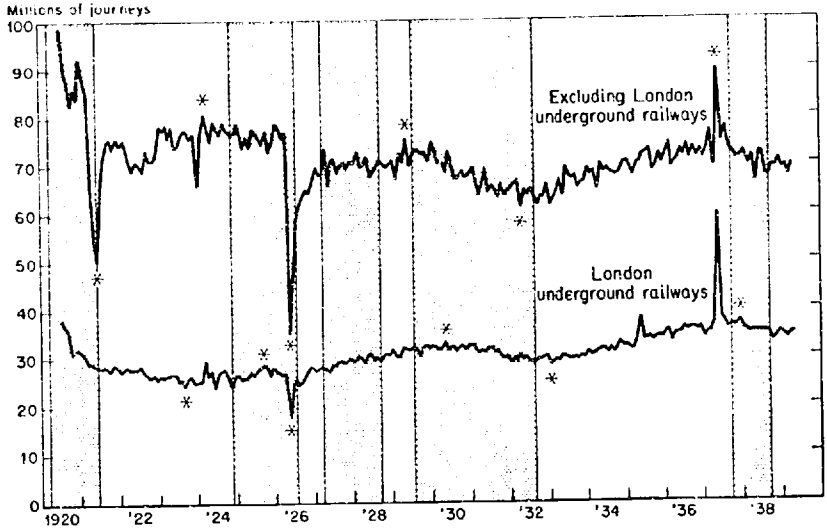
Growth of motor competition

For the railways, the growing appeal of travel by private motor car was probably of greater moment than the growth of travel by bus. From 1922 to the outbreak of war seventeen years later, car ownership in-

[7] From Table 12, column 8. The average ending date of the year, weighted by the amount of traffic reported in connection with each ending date, would be slightly before March 31 prior to 1932 and somewhat later than March 31 in later years. Our usual practice is to chart a figure in the middle of the period to which it pertains. Accordingly we have plotted the data at September 30 of the calendar year opposite which they are shown in the table, through 1931, and a little later beginning 1932.

CHART 9

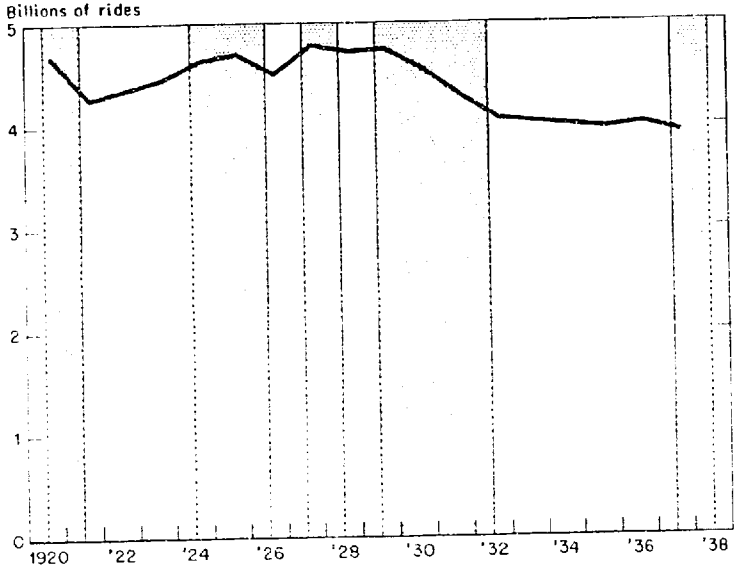
Rail Journeys, July 1920-April 1939



Shaded periods are reference contractions.

CHART 10

Rides on Trams and Trolley Vehicles, 1920-1937



Shaded periods are reference contractions

TABLE 12

Rides on Trams and Trolley Vehicles, 1920-1937
and on Trams, Trolley Vehicles and Busses, 1932-1937
(millions)

CALENDAR YEAR	PRIVATE COMPANIES[a]		PUBLIC AUTHORITIES[b]		LONDON PASSENGER TRANSPORT BOARD[c]		TOTAL *Tram and Trolley Vehicles* (Cols. 2-7)	*Motor Busses, Calendar Year*	TOTAL Cols. (8) + (9)
	Trams	*Trolley vehicles*	*Trams*	*Trolley vehicles*	*Trams*	*Trolley busses*			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1920	821	[d]	3,848	11			4,680		
1921	699	[d]	3,558	10			4,267		
1922	655	1	3,694	11			4,361		
1923	660	1	3,784	18			4,462		
1924	645	1	3,976	23			4,645		
1925	604	1	4,065	33			4,703		
1926	545	1	3,916	50			4,512		
1927	565	1	4,140	79			4,785		
1928	545	7	4,078	92			4,722		
1929	520	19	4,094	108			4,741		
1930	503	24	3,892	129			4,548		
1931	447	39	3,660	145			4,291		
1932	398	60	3,447	161			4,066	5,345	9,411
1933[e]	197	41	2,578	186	1,002	27	4,031	5,424	9,455
1934	172	54	2,479	255	1,013	28	4,001	5,722	9,723
1935	165	56	2,378	320	983	70	3,972	6,031	10,003
1936	156	61	2,319	368	904	203	4,011	6,427	10,438
1937	111	64	2,247	433	701	368	3,924	6,664	10,588

NOTES TO TABLE 12

[a] Calendar Year.

[b] Year ending March 31 following year in Col. 1.

[c] Year ending June 30 following year in Col. 1.

[d] Less than 500,000.

[e] The drop in the figures in cols. (2) to (4) reflects the transfer of many undertakings to the LPTB: their traffic even in the fraction of a year before the date of transfer is not included.

Cols. (2) to (5) from Ministry of Transport, *Tramways and Light Railways. Return of Capital, etc.* (annual), various issues. (6) and (7) from London Passenger Transport Board, *Annual Report and Accounts*, 1939. (9) from Traffic Commissioners' *Annual Report*, 1937-38.

creased continually — even in the contraction years 1930-32, although less rapidly then than before or after (Chart 6). A humbler form of private transport, motorcycling, gained in popularity up to the middle of 1928; but even before that date cars were increasingly preferred to cycles, and after it the number of the latter gradually declined. The growth of motoring can be discerned also in the swiftly rising consumption of motor fuel (Table 13). The figures, however, include consumption by all kinds of motor vehicles, not only cars. Meanwhile, rail travel, which grew so steadily before World War I, diminished or stagnated from one business cycle to the next. Business expansion in 1921-24 and 1926-27 did not restore to the railway companies all the passengers they had lost in contraction; there was little if any net gain from 1927 to 1929, or from 1929 to 1937.

Travel less volatile than tonnage

Although riding on railways and tramways was affected by business conditions, the disturbances were not as great as those in freight traffic. Between 1920 and 1938 the percentage fluctuations in the number of rail journeys (including those of season ticket holders but not rides on the London underground railways) were smaller than the most nearly corresponding specific changes in tonnage originated (Table 14. The one exception, resulting from the continued decline in rail journeys to 1940, may be ascribed to war conditions.) Percentage changes in the number of tram rides were likewise smaller than those in tonnage.

We are obliged to base the foregoing comparisons on annual figures, since regular monthly counts of railway journeys including those of season ticket holders have never been made, and there are no monthly figures on tram and trolley rides. We do have monthly data pertaining

TABLE 13

Domestic Supply of Automotive Fuel (Motor Spirit), 1921-1951
(millions of gallons)

1921	238.7	1935	1,331.7
1922	284.6	1936	1,402.5
1923	287.6	1937	1,476.8
1924	379.2	1938	1,584.0
1925	358.5	1939	1,515.0
		1940	1,241.6
1925	485.9	1941	1,546.1
1926	677.0	1942	1,418.4
1927	702.9		
1928	823.6	1942	1,097.5
1929	870.0	1943	1,191.9
1930	1,057.3	1944	1,666.1
		1945	1,680.2
1930	1,095.8	1946	1,369.5
1931	1,017.6	1947	1,288.0
1932	1,092.3	1948	1,359.6
1933	1,199.5	1949	1,573.3
1934	1,241.5	1950	1,696.4
		1951	1,906.9

Computed from the following data, so far as available: (1) imports, (2) production of British refineries, (3) production in Britain from coal and shale, (4) imports re-exported, (5) domestic production exported.

1921-25 segment of table: (1)--(4).

1925-30 segment: (1)+(2)−(4)−(5).

1930-51 segments: (1)+(2)+(3)−(4)−(5). Aviation spirit excluded from (1) and (4) in 1942-51 segment, included previously.

(1), (4), and (5) from Customs and Excise Department, *Annual Statement of the Trade of the United Kingdom. . . .* In earlier years, (2) from Board of Trade Journal, e.g. June 6, 1935, p. 907; (3) from Mines Department, *Annual Report.* In later years, both from Central Statistical Office, *Annual Abstract of Statistics.*

to railway trips of passengers other than season ticket holders, and to rides on the underground. But they are not useful before 1929 or after 1937.[8] We therefore confine our comparisons to two phases (Table 15).

[8] Since we do not know when the peaks in travel corresponding to the 1920 peaks in ton-miles occurred, we cannot compute the decline from these peaks to the following troughs. Interpretation of comparative changes in 1921-26 would be complicated by the strikes. Furthermore, we would have to compare an expansion in ton-miles that began in 1921 and ended in February 1924 with an expansion in underground rides that did not begin until September 1923 and did not end until September 1925 — a comparison of doubtful meaning. There was no peak in either kind of travel until 1927 and no trough around 1928, so we have nothing to compare with the 1926-27 expansion, 1927-28 contraction, or 1928-29 expansion of freight traffic. We do not know when the contraction of travel that began in 1937 ended.

TABLE 14

Revenue Tons Originated, Railway Journeys, and Tram Rides Per Cent Change between Specific Peak and Trough Years, 1920-1938

Level of traffic	Tons originated[a]			Rail journeys[b]			Tram rides[c]		
	Date of level	*Number (millions)*	*% change from preceding date*	*Date of level*	*Number (millions)*	*% change from preceding date*	*Date of level*	*Number (millions)*	*% change from preceding date*
Peak	1920	318.6	.....	1920	1,704	.....	1920	4,680	.....
Trough	1921	219.9	−31	1922	1,366	−20	1921	4,267	−9
Peak	1923	347.9	58	1923	1,410	3	1925	4,703	10
Trough	1926	218.0	−37	1926	1,184	−16	1926	4,512	−4
Peak	1927	324.4	49	1927	1,257	6	1927	4,785	6
Trough	1928	308.6	−5	1928	1,250	−1	1928	4,722	−1
Peak	1929	331.9	8	1929	1,268	1	1929	4,741	[d]
Trough	1932	251.4	−24	1932	1,141	−10	1935	3,972	−16
Peak	1937	298.7	19	1937	1,295	13	1936	4,011	1[e]
Trough	1938	265.8	−11	1940	967	−25	[f]	[f]	[f]

[a] Including livestock.

[b] Including journeys of season ticket-holders but excluding London underground railways.

[c] Including rides on trolley vehicles. See Table 12.

[d] Increase, less than 0.5 per cent.

[e] Tram rides plus bus rides increased 13 per cent from 1932 to 1937.

[f] Not available.

In both, the changes in rail journeys and in underground rides were milder than those in ton-miles. Travelers are likely to take longer journeys in prosperous times. Passenger-miles may therefore vary more than the number of passengers. But American statistics indicate that variations in passenger-miles are also milder than those in ton-miles.

Since travel passed through few up-and-down fluctuations before

TABLE 15

Ton-Miles, Railway Journeys, and London Underground Rides Per Cent Change between Specific Peak and Trough Months, 1921-1938

	TON-MILES[a]		RAIL JOURNEYS[b]		UNDERGROUND RIDES		
LEVEL OF TRAFFIC	% Change from preceding date	Date level reached	Number (millions)	% Change from preceding date	Date level reached	Number (millions)	% Change from preceding date
Peak	.....	May 1929	71.6	.....	May 1930	32.0	...
Trough	—25	April 1932	64.0	—11	Jan. 1933	29.0	—9
Peak	31	May 1937	77.8	22	Dec. 1937	36.1	24

[a] For dates and absolute amounts see Table 7.

[b] Excluding those of season ticket holders and excluding London underground railways.

1913, we can't make phase-by-phase comparisons of amplitude in that earlier age. But in a sense we can say that then, too, passenger was more stable than freight traffic. Tonnage tended to increase more than the number of passengers in expansions, less in contractions (Table 16). In all 7 rising phases of business, both freight traffic and travel increased; but in 6 of them, the ratio of tons to passengers also rose, i.e. tonnage increased by a greater percentage than passengers. In 3 of 8 contractions, tonnage fell, but passengers became more numerous; the ratio, of course, fell. In 3 others, both kinds of traffic increased, but the ratio again fell — the rise in journeys was more vigorous than that in freight carried.

A similar conclusion emerges when we ask what happened to travel during the phases in freight traffic rather than during the reference phases. In all of the 7 freight expansions for which we know the number of passengers, the latter increased, but usually not in proportion to tonnage, for in 5 of them the ratio rose. In all the contractions of tonnage, journeys increased, and the ratio, of course, fell.

TABLE 16

Tons Conveyed, Number of Journeys, and Ratio of Tons to Journeys
Direction of Net Change between Reference Peak and Trough Years, 1857-1908
and between Peak and Trough Years in Tons Conveyed, 1861-1912

EXPANSIONS				CONTRACTIONS			
Dates	*Tons*	*Journeys*	*Ratio*	*Dates*	*Tons*	*Journeys*	*Ratio*
			REFERENCE PHASES				
				1857-58	+	+	+
1858-60	+	+	+	1860-62	+	+	—
1862-66	+	+	—	1866-68	+	No data	No data
1868-73	+	No data	No data	1873-79	+	+	—
1879-83	+	+	+	1883-86	—	+	—
1886-90	+	+	+	1890-94	+	+	—
1894-1900	+	+	+	1900-01	—	+	—
1901-03	+	+	+	1903-04	+	+	+
1904-07	+	+	+	1907-08	—	+	—
			PHASES IN TONS CONVEYED				
				1861-62	—	+	—
1862-67	+	+	—	1867-68	—	No data	No data
1868-73	+	No data	No data	1873-74	—	+	—
1874-77	+	+	—	1877-78	—	+	—
1878-83	+	+	+	1883-86	—	+	—
1886-91	+	+	+	1891-93	—	+	—
1893-1900	+	+	+	1900-01	—	+	—
1901-07	+	+	+	1907-08	—	+	—
1908-11	+	+	+	1911-12	—	No data	No data

Season ticket business more stable than other travel

About one-third of all journeys in Britain are authorized by season tickets, good for a number of trips and sold at reduced rates. As far as one can tell from annual figures for the years after World War I, sales of season tickets did not actually rise and fall with the state of the economy (Chart 8).[9] On the contrary, they declined continuously from 1920 to 1933; three business expansions failed to halt the downward trend. But they did retard it. The number of tickets sold conformed, in this sense, without exception from 1919 to 1938.

Apparently, however, this part of the passenger business was somewhat more stable, as far as cyclical disturbances are concerned, than

[9] Number of journeys on season tickets computed as explained in note 3.

TABLE 17

Journeys of Season Ticket Holders and Others, 1902-1913

	JOURNEYS OF OTHER PASSENGERS THAN SEASON TICKET HOLDERS (millions) (1)	NUMBER OF SEASON TICKETS[a] (thousands) (2)	JOURNEYS OF SEASON TICKET HOLDERS (2) x 600[a] (millions) (3)	TOTAL JOURNEYS (1) + (3) (4)	RATIO OF OTHER JOURNEYS TO TOTAL (1) ÷ (4) (5)
1902	1,188.2	592.6	355.6	1,543.8	.770
1903	1,195.3	618.0	370.8	1,566.1	.763
1904	1,198.8	643.9	386.3	1,585.1	.756
1905	1,199.0	663.0	397.8	1,596.8	.751
1906	1,240.3	693.5	416.1	1,656.4	.749
1907	1,259.5	715.6	429.4	1,688.9	.746
1908	1,278.1	721.8	433.1	1,711.2	.747
1909	1,265.1	730.3	438.2	1,703.3	.743
1910	1,306.7	752.7	451.6	1,758.3	.743
1911	1,326.3	779.2	467.5	1,793.8	.739
1912	1,294.3	785.1	471.1	1,765.4	.733
1913	1,454.8[b]	737.8[b]	442.7[b]	1,897.5	[b]

[a] Cf. note 3 to text.

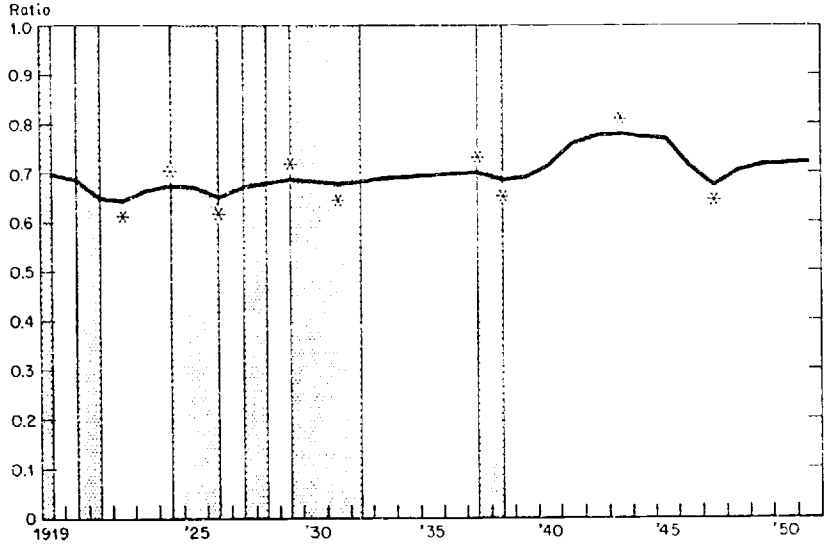
[b] Not comparable with figures for other years: all journeys of workmen included in "other"; multiple-trip tickets for workmen formerly included in season tickets, and their journeys in those of season ticket holders.

the remainder; in other words, the number of individually purchased journeys tended to rise and fall by greater percentages than the number of journeys authorized by season tickets. The ratio of other-than-season-ticket journeys to all journeys rose in 4 of the 5 business expansions after 1918 for which we have data, fell in 4 of the 5 contractions (Chart 11). The fall in 1919-20 was not as rapid as in 1920-21; the rise in 1927-28 was slightly less rapid than that in 1928-29, considerably less rapid than in 1926-27.

The figures available for a short period before the war are harder to interpret. Rides of season ticket holders increased every year — did not, like other traffic, diminish from 1908 to 1909 or from 1911 to 1912 (Table 17). From their failure to do so we might infer greater stability. Although the ratio of non-season-ticket to total journeys fell in the three reference phases, the decline was more rapid in 1903-04 than in

CHART 11

Ratio of Journeys Other than Those of Season Ticket Holders to All Rail Journeys, 1919-1951



Shaded periods are reference contractions.

1904-07, as we should expect if other traffic is more variable. But in 1907-08 the ratio actually rose.[10]

[10] As we have noted before, perhaps we should regard the response of passenger traffic to business contraction as having occurred in 1908-1909. But even the 1908-1909 change, from .747 to .743 or —.004, differs negligibly from the average 1904-1907 change, (.756 — .746) ÷ 3 or — .0033, or the average 1904-1908 change, (.756 — .747) ÷ 4 or — .00225.