

The preceding tables show that the chief seat of the woollen and worsted manufacture is in Yorkshire, while Lancashire stands second, but a long way behind. In the western and some of the midland counties where the trade is carried on, it is on a very reduced scale, as the factories have no power-looms. The eastern counties likewise have at present but a very small share of the trade, which is now all but extinct in Norwich, the most ancient manufacturing town in the kingdom, where a colony of Flemings settled in the reign of Henry I., getting the long wool spun at the neighbouring market-town of Worstead, after which the new produce was named. The once famous market town itself has sunk to an obscure village.

Number of silk factories.

Silk.—Compared with the manufacture of goods made from cotton and wool, that of other textile fabrics is comparatively unimportant, the main articles being silk, flax, and hemp. As far as the United Kingdom is concerned, the manufacture of flax stands first among these minor textile fabrics; but taking England alone, the chief of them is silk. There were in 1874 in the United Kingdom 818 silk factories, with 1,336,411 spindles and 10,002 power-looms, employing 45,559 persons. Of this total, only 4 factories, with 226 power-looms, employing 740 persons, were in Scotland; and but 2 factories, with 7 power-looms, employing 400 persons, were in Ireland.

Silk factories in England.

The following table shows the number of silk factories in England, with the number of spindles and power-looms in use, and the number of persons employed, at various periods from 1850 to 1874:—

Years.	Number of Silk Factories.	Number of Spindles.	Number of Power Looms.	Number of Persons Employed.
1850	272	1,188,908	6,092	41,703
1856	454	1,063,555	9,260	55,300
1861	761	1,305,910	10,635	51,191
1868	587	968,182	14,511	39,956
1870	692	929,157	12,135	47,311
1874	812	1,103,893	9,759	44,419

The number of persons employed in the silk factories of England in 1874 comprised 12,772 males and 31,647 females. Of the males, 2324 were under thirteen, 2375 from thirteen to eighteen, and 8073 over eighteen years of age. Of the females, 4521 were under thirteen. The employment of children of both sexes in silk factories was on the decrease from 1850 to 1874, while during the same period it was largely on the increase in cotton factories, and also, but to a smaller degree, in the woollen and worsted manufacture.

Distribution of silk factories over England.

The following table shows the distribution of silk factories over the various counties of England—there are none in Wales—with the number of power-looms in use and of persons employed, at the end of the year 1874:—

Counties.	Number of Silk Factories.	Number of Power Looms.	Number of Persons Employed.
Middlesex, Surrey, and Kent	10	52	297
Herts, Bucks, Oxford, Northampton, Hunts, Beds, and Cambridge	6	..	1,162
Essex, Suffolk, and Norfolk	19	2,109	5,815
Wilts, Dorset, Devon, Cornwall, Somerset, and Hants	20	449	2,940
Gloucester, Hereford, Salop, Stafford, Worcester, and Warwick	518	1,876	7,909
Leicester, Rutland, Lincoln, and Notts	16	74	911
Cheshire	147	1,735	11,841
Lancashire	24	2,666	5,376
Derbyshire	22	48	2,479
Yorkshire	30	750	5,689
Total	812	9,759	44,419

It will be seen from the above table that the silk manufacture is more dispersed over England than either that of cotton or woollen fabrics. The tendency to use machinery appears most pronounced in Lancashire and the three eastern counties, in both of which districts the number of power-looms is nearly half as large as that of hands employed; while in other counties the number of power-looms is very small in proportion to that of workers.

Linen.—Next to silk in importance, as one of the minor textile manufactures of England, stands flax. At the end of 1874, there were in the whole of the United Kingdom 449 factories for spinning flax, using 1,473,800 spindles and 41,980 power-looms, and employing 128,459 hands. In the returns for 1874, Scotland took the first rank as regards the number of flax factories, Ireland the second, and England the third rank. There were in Scotland at that date 159 factories, with 275,119 spindles and 18,529 power-looms, employing 45,816 persons; and in Ireland 149 factories, with 906,946 spindles and 17,827 power-looms, employing 60,316 hands.

The following table gives the number of factories for flax spinning in England, with the number of spindles and power-looms in use, and the number of persons employed, at various annual periods from 1851 to 1874:—

Years.	Number of Flax Factories.	Number of Spindles.	Number of Power Looms.	Number of Persons Employed.
1851	135	265,568	1,083	19,001
1856	138	441,759	1,987	19,787
1861	136	344,308	2,160	20,305
1868	128	437,623	5,086	21,859
1870	155	269,768	3,048	19,816
1874	141	291,735	5,624	22,327

The number of persons employed in the flax-spinning factories of England in 1874 comprised 6856 males and 15,471 females. Of the males, 844 were boys under thirteen, 1380 lads from thirteen to eighteen, and 4632 men over eighteen years of age. Of the females, 1245 were children under thirteen, and 14,226 women over thirteen years of age. There was a slight increase in the proportion of children of both sexes employed in the flax factories of England in the period from 1850 to 1874. In the Scottish flax factories, during the same time, the increase of children, notably females, was very great. There were only 218 girls under thirteen employed in all the flax-spinning factories of Scotland in 1850, and the number had risen to 1956 in 1874.

The following table shows the distribution of flax factories over the various counties of England—there are none in Wales—at the end of 1874:—

Counties.	Number of Flax Factories.	Number of Power Looms.	Number of Persons Employed.
Middlesex, Surrey, and Kent	3	8	164
Sussex, Hants, and Berks	2	36	153
Essex, Suffolk, and Norfolk	5	149	256
Wilts, Dorset, Devon, Cornwall, and Somerset	30	392	2,736
Gloucester, Hereford, Salop, Stafford, Worcester, and Warwick	5	99	960
Leicester, Rutland, Lincoln, and Notts	2	..	217
Lancashire	18	1,133	4,404
Derbyshire	2	95	170
Yorkshire	59	3,507	12,058
Durham, Northumberland, Cumberland, and Westmoreland	14	149	1,174
Cheshire	1	56	35
Total	141	5,624	22,327

The chief seat of the flax manufacture, it will be seen, is in Yorkshire. It is a new branch of industry in Leicestershire and the adjoining midland counties, where it did not exist previous to 1870.

Hemp and Jute.—Among the minor textile manufactures, hemp and jute come next to flax. The hemp manufacture is of comparatively recent date. There were but five hemp factories in the United Kingdom in 1861, but they had increased to 61 in 1874. Of these 45 were in England, 12 in Scotland, and 4 in Ireland. The English hemp factories, situated mainly in Lancashire and the northern counties, had in use 6448 spindles and 22 power-looms in 1874, and gave employment to 3039 persons, of whom 1574, or about one-half, were women. Of jute factories, there were in the United Kingdom 110 in 1874, England having 15, Scotland 84, and Ireland 11. The English jute factories, distributed over the northern and midland counties, had in use 21,754 spindles and 927 power-looms in 1874, and employed 4933 persons, of whom 3423, or nearly three-fourths, were women. In 1861 the whole of the jute factories of England employed only 107 persons.

Hosiery, lace, and shoddy factories.

Hosiery, Lace, and Shoddy.—There are enumerated in parliamentary papers, and various official returns, a number of other existing factories, among them of hosiery, lace, "shoddy," hair, felt, and elastic fabrics. The hosiery factories of the United Kingdom employed 11,980, and the lace factories 10,373 persons in 1874; but all the others gave employment, in the aggregate, to less than 9000 workers. The hosiery factories were all in England, with the exception of 4 in Scotland, employing 1006 persons. In the English hosiery factories, 65 in number, nearly all in Leicestershire and adjoining midland counties, there were 10,914 persons employed in 1874, about one-half of them women. The hosiery factories of England more than doubled from 1861, when their number was 65, to 1874. The same was the case with the lace factories, which increased from 186 to 311 in 1874. Another notable textile industry enumerated in the official returns is that of "shoddy factories." There were of these establishments, 125 in the United Kingdom in 1874, all of them in England, with the exception of some very small Scottish ones, returned as employing together 7 persons. The English shoddy factories, dispersed in 1874 over Yorkshire and Lancashire, with but a few in other counties, had in use in that year 101,134 spindles and 1437 power-looms, and employed 3424 persons, more than one-half of them women. There was an increase in the shoddy factories of Lancashire from 1868 to 1874, but a decrease during the same period in those of Yorkshire.

Factory Supervision.—To protect the health of the people employed in English manufacturing industries, and to preserve them from accidents of all kinds, parliament passed in recent years a number of laws, known generally as the Factory Acts. In these Acts, the hours of labour are restricted, more especially for young persons and women, who cannot be set to work for more than 12 hours on any day, and not for more than 60 hours per week. The due execution of the Factory Acts is superintended by inspectors of factories, appointed by the Government, who have to make to the home secretary half-yearly reports, which are printed and laid before parliament. In a recent report it is stated that the laws passed are constantly more appreciated both by employers of labour and by the workers, but that the latter are subjected to much suffering through stagnation of trade. The latter is ascribed mainly to foreign competition. While there is doubtless truth in this view, there can be equally little doubt that other causes have affected, and continue to affect, English manufacturing industry.

FISHERIES.—The stagnation of trade which made itself felt, in recent years, in the chief manufactures, operated

also upon the fisheries. It appears from official returns that there was a gradual decrease in the number of fishing boats, as will be seen from the subjoined table, which gives the number of boats of which the tonnage was known, for each division of the United Kingdom in the years 1872, 1873, and 1874:—

Divisions.	1872.	1873.	1874.
	Number.	Number.	Number.
England and Wales	14,237	14,171	14,126
Scotland	14,451	13,954	13,471
Ireland	8,450	7,193	6,529
Isle of Man	375	371	377
Channel Islands	783	600	568
Total	38,296	36,289	35,071

The following table shows the tonnage of the preceding number of fishing boats, in each of the years named:—

Divisions.	1872.	1873.	1874.
	Tons.	Tons.	Tons.
England and Wales	140,535	145,134	150,268
Scotland	92,595	92,224	91,119
Ireland	28,651	25,629	25,226
Isle of Man	5,047	5,032	5,185
Channel Islands	2,988	2,725	2,469
Total	269,816	270,744	274,267

It will be seen that there was an increase, during the three years, in the total tonnage of the English, but a decrease in that of the Scottish and Irish fishing boats, as well as in that of the Channel Islands.

The fishing boats of the United Kingdom are divided by the Board of Trade into three classes,—the first class comprising all boats over 15 tons; the second all boats under 15 tons, propelled otherwise than by oars; and the third class all boats navigated only by oars. The number of the first class in England and Wales at the end of 1874 was 2934, with a tonnage of 110,500, and in Scotland 2407, with a tonnage of 40,629. Of fishing boats of the second class there were at the same date 8313, with a tonnage of 35,670, in England, and 9815, with a tonnage of 48,124, in Scotland. Of boats of the third class, there were in England 2879, with a tonnage of 4098, and in Scotland 1249, with a tonnage of 2366. Thus England had the superiority in vessels of the first and third, but not in those of the second class. The fisheries of England are devoted mainly to the netting of mackerel, pilchards, and similar fish, and those of Scotland to cod, ling, and herrings.

The imports of fish from foreign countries have in recent years been on the increase, and the exports on the decrease. The total value of the imports of fish in 1872 was £859,042, and in 1876 it amounted to £1,459,974. The total exports of fish were of the value of £1,183,801 in 1872, and of £624,726 in 1876. The exports are chiefly in herrings, of which 631,750 barrels were shipped to foreign countries in 1872, and 426,588 barrels in 1876. (See also FISHERIES.)

VI.—Commerce.—Shipping.

British commerce received an enormous development, unparalleled in the history of any nation, during the half a century from 1826 to 1876. In the year 1826 the aggregate value of the imports into and exports from the United Kingdom amounted to no more than £88,758,678; while the total rose to £110,559,538 in 1836, and to £205,625,831 in 1846. In 1856 the aggregate of imports and exports had risen to £311,764,507, in 1866 to £534,195,956, and in 1876 to £631,931,305. Thus the commercial transactions of the United Kingdom—those of England, by itself,

cannot be given—with foreign states and British colonies increased more than seven-fold in the course of fifty years. The following two tables exhibit the values of the annual imports, of the total annual exports of British home produce, and of the total imports and exports of the United Kingdom—the latter including exports of foreign and colonial produce—as well as the proportions per head of population, for every third year from 1864 to 1876:—

Years	Total Imports.	Exports of British Home Produce.	Total Imports and Exports.
1864	£ 274,952,172	£ 160,449,053	£ 437,571,786
1867	275,183,137	180,961,923	500,985,666
1870	303,257,493	199,586,322	547,338,070
1873	371,287,372	255,164,603	682,292,137
1876	375,154,703	200,639,204	631,931,305

Years.	Imports.			Exports of British Produce.			Total Imports and Exports.		
	Proportion per Head of population.			Proportion per Head of Population.			Proportion per Head of Population.		
1864	£.	s.	d.	£.	s.	d.	£.	s.	d.
1867	9	5	7	5	8	4	16	9	0
1870	9	14	4	6	7	11	17	10	10
1873	11	11	2	7	18	10	21	4	9
1876	11	6	8	6	1	3	19	1	11

The following table exhibits the value of the imports into the United Kingdom from the principal British possessions and foreign countries in each of the years 1875 and 1876:—

	Year 1875.	Year 1876.
From British Possessions:—		
India	£ 30,137,295	£ 30,025,024
Australasia	20,559,154	21,961,929
British North America	10,212,624	11,023,732
West Indies	5,414,059	6,894,331
Cape of Good Hope and Natal	4,478,960	4,192,416
Ceylon	4,380,821	3,134,183
Straits Settlements	3,119,310	2,641,946
Hong Kong	1,154,910	1,356,850
All other possessions	1,753,874	3,102,115
Total from British Possessions	84,423,971	84,232,576
From Foreign Countries:—		
United States	69,590,854	75,899,008
France	46,720,101	45,304,854
Germany	21,836,401	21,115,189
Russia	20,708,901	17,574,488
Netherlands	14,836,648	16,602,154
China	13,607,582	14,938,641
Belgium	14,822,240	13,848,293
Egypt	10,895,043	11,481,519
Sweden and Norway	8,918,638	10,654,311
Spain	8,660,953	8,763,746
Turkey	6,535,714	7,444,323
Peru	4,884,181	5,630,670
Brazil	7,418,605	5,178,386
Denmark	4,241,671	4,217,934
Italy	4,632,619	4,152,201
Chili	4,196,096	3,584,598
Portugal	4,444,071	3,361,071
Spanish West Indies	3,668,776	2,943,385
Greece	1,762,301	1,799,377
Argentine Republic	1,359,783	1,664,029
Philippine Islands	1,559,500	1,442,556
Java and dependencies	1,442,607	1,440,860
Roumania	594,158	1,238,091
Uruguay	1,208,590	841,314
All other countries	10,306,440	9,701,729
Total from Foreign Countries	289,515,606	290,822,127
Total imports	373,939,577	375,154,703

Foreign import markets.

The exports of British home produce from the United Kingdom in each of the years 1875 and 1876 were sent to the following colonial possessions and foreign countries:—

Exports of Home Produce.	Year 1875.	Year 1876
To British Possessions:—		
India	£ 24,246,406	£ 22,405,420
Australasia	19,491,247	17,681,661
British North America	9,036,583	7,358,151
Cape and Natal	4,909,856	4,368,841
Hong Kong	3,599,811	3,080,376
West Indies	2,186,527	2,927,996
Straits Settlements	1,961,634	1,968,946
Gibraltar	969,222	1,120,965
Ceylon	1,076,752	1,073,505
All other possessions	2,116,721	2,873, 63
Total to British Possessions	71,092,163	64,859,224
To Foreign Countries:—		
Germany	23,287,883	20,082,262
United States	21,868,279	16,833,517
France	15,357,127	16,085,615
Netherlands	13,118,691	11,777,192
Italy	6,766,698	6,689,402
Russia	8,059,524	6,182,838
Turkey	5,889,905	5,922,825
Brazil	6,869,491	5,919,758
Belgium	5,781,938	5,875,407
China	4,928,500	4,611,180
Sweden and Norway	4,538,455	4,224,719
Spain	3,430,340	3,992,865
Egypt	2,945,846	2,630,407
Portugal	2,563,067	2,231,191
Denmark	2,323,707	2,199,106
Japan	2,460,227	2,082,685
Spanish West Indies	2,630,634	2,015,113
Chili	2,207,418	1,945,791
Java	1,735,996	1,676,193
Argentine Confederation	2,886,002	1,543,532
Uruguay	713,830	1,006,307
Roumania	1,054,744	707,568
All other countries	2,738,877	9,595,007
Total to Foreign Countries	152,373,800	135,779,980
Total exports of home produce	223,465,963	200,639,204

It will be seen from the preceding tables that the bulk of the commercial transactions of the United Kingdom, both as regards imports and exports, is with but a few states—mainly three British colonies and eight or nine foreign countries. In the same manner, the great mass of imports, as well as of exports of British produce centres, in each case, in about half a dozen principal articles. More than one-half of the total imports into the United Kingdom are made up of the six articles enumerated in the following table, one-half of which represent food for the nation, and the other half raw material for its manufactures. The table shows the value of each of these six articles imported into the United Kingdom during the years 1875 and 1876:—

Principal Articles Imported.	1875.	1876.
1. Corn and flour	£ 53,086,691	£ 51,812,438
2. Cotton, raw	46,259,822	40,180,880
3. Wool, sheep and other	23,437,413	23,637,809
4. Sugar, raw and refined	21,548,303	20,456,977
5. Wood and timber	15,424,498	19,140,526
6. Tea	13,766,961	12,697,204

The six principal articles of British produce exported to colonial possessions and foreign countries are derived from the labours of either manufacturing or mining industry. It may be gathered from the preceding chapters on mines and minerals, and on manufactures, to what an extent these six great export articles are the produce of each of the divisions of the United Kingdom.

Concentration of British commerce.

Principal imports.

Principal articles exported	1875.	1876.
1. Cotton manufactures:		
Piece goods, white or plain	£ 33,255,013	£ 31,454,280
" printed or dyed	19,900,918	18,494,492
" of other kinds	5,442,922	4,910,763
Cotton yarn	13,172,860	12,781,733
Total	71,771,713	67,641,268
2. Woollens and worsted:		
Cloths, coatings, &c.	6,850,203	6,451,410
Flannels, blankets, and baizes	1,239,637	1,014,886
Worsted stuffs	11,159,914	9,141,605
Carpets and druggets	1,159,979	911,873
All other sorts	1,249,592	1,083,704
Woolen and worsted yarn	5,099,307	4,417,247
Total	26,758,632	23,020,719
3. Iron and steel:		
Iron, pig and puddled	3,449,916	2,842,434
" bar, angle, bolt, and rod	2,725,907	1,945,445
" railroad, of all sorts	5,453,836	3,700,105
" wire	780,037	731,148
" tinued plates	3,686,607	2,891,693
" hoops and plates	3,304,148	2,858,621
" wrought, of all sorts	4,342,492	4,041,418
" old, for re-manufacture	102,837	95,977
Steel, wrought and unwrought	1,901,491	1,635,569
Total	25,747,271	20,737,410
4. Coals, cinders, and fuel	9,658,088	8,904,463
5. Machinery	9,058,647	7,210,426
6. Linen:—		
White or plain	5,904,958	4,365,072
Printed, checked, or dyed	470,295	449,918
Of other sorts	897,667	805,646
Linen yarn	1,855,684	1,449,513
Total	9,128,604	7,070,149

The most important fact in connection with the foreign commerce of the United Kingdom in recent years, is that there has been a gradual and steady increase of imports, together with a decrease of exports of home produce. The movement began in 1872. Up to that time, the exports of British home produce had kept on increasing with the imports, although at a lesser rate, and far inferior in aggregate value; but a change took place in the latter year. While the imports continued their upward course, gradually rising from £354,693,624 in 1872 to £375,154,703 in 1876, the exports of British produce fell from £256,257,347 in 1872 to £200,639,204 in 1876. The decline in exports, regular and steady throughout the period, and with a tendency to become more pronounced every year, affected all the principal articles of British home produce just enumerated. The value of the cotton manufactures exported sank from £80,164,155 in 1872 to £67,641,268 in 1876; woollen fabrics from £38,493,411 to £23,020,719; iron and steel from £35,996,167 to £20,737,410; coals from £10,442,321 to £8,904,463; machinery from £8,201,112 to £7,210,426; and linen manufactures from £10,956,761 to £7,070,149. The decline during the four years, it will be seen, was greatest of all in textile manufactures, and least in coals and machinery.

Customs Receipts.—While the distribution of the exports from each of the three great divisions of the United Kingdom may be judged by their comparative manufacturing activity, that of the imports can be approximately ascertained—making due allowance for great centres of commerce—from the custom-house return. The receipts of the customs were as follows in each of the years 1875 and 1876:—

	Year 1875.	Year 1876.
England and Wales	£ 15,763,666	£ 15,802,004
Scotland	1,597,863	1,667,915
Ireland	1,755,487	1,825,881
Total, United Kingdom	19,117,016	19,299,800

More than one-half of the total customs receipts of the United Kingdom, and nearly two-thirds of those of England and Wales, are collected in London; while the amount collected at Liverpool is not very far from the total receipts of Scotland and Ireland. Besides London and Liverpool, there are but eight towns of England and Wales, out of eighty-seven which have custom-house establishments, where the collection amounts to £100,000 and more per annum. The following is a list of these eight ports, together with London and Liverpool, giving the sums collected by the customs in each of them, in the years 1875 and 1876:—

Ports	Year 1875.	Year 1876
London	£ 9,940,139	£ 9,981,021
Liverpool	2,919,419	2,979,241
Bristol	691,730	673,395
Newcastle	334,738	304,422
Manchester	150,255	161,985
Hull	161,461	159,009
Exeter	128,334	128,809
Leeds	137,193	126,422
Chester	103,013	105,918
Sunderland	107,500	101,609

The table indicates commerce in goods only that pay duty; otherwise Liverpool would show larger returns. It appears from the returns of the last thirty years that the commerce of the country has a constantly growing tendency towards concentration, and that while the centres of commerce—the smaller ports—are gradually decreasing, there is corresponding increase in those of the two chief ports, London and Liverpool, which are gradually becoming the all-absorbing centres of England's international trade and navigation.

Shipping.—The shipping of the United Kingdom increased sixfold in the period from 1840 to 1876. In the year 1840 the total tonnage of vessels, British and foreign, which entered at ports of the United Kingdom was 4,657,795; and in the year 1850 it had risen to 7,100,476; while in 1860 the total tonnage was 12,172,785. The rise continued uninterrupted, as will be seen from the following table, which gives the tonnage of British and of foreign vessels which entered and cleared at ports of the United Kingdom every third year from 1864 to 1876:—

Years.	Entered.		
	British	Foreign.	Total.
1864	Tons 9,028,100	Tons 4,486,911	Tons 13,515,011
1867	11,197,865	5,140,952	16,338,817
1870	12,380,390	5,732,974	18,113,364
1873	14,541,028	7,323,929	21,864,957
1876	16,511,951	8,555,313	25,067,264

Years.	Cleared.		
	British.	Foreign.	Total.
1864	Tons 9,173,575	Tons 4,515,923	Tons 13,689,498
1867	11,172,205	5,245,090	16,417,295
1870	12,691,790	5,835,028	18,526,818
1873	15,106,316	7,468,713	22,575,029
1876	16,930,028	8,787,610	25,717,638

The total tonnage here enumerated comprised both sailing vessels and steamers. The number and tonnage of the former is decreasing, and that of the latter increasing, to such an extent that steam vessels appear likely to absorb the whole international commerce of the country.

The following table of the principal ports of the country summarizes the tonnage of vessels with cargoes which entered and cleared coastwise, and from and to foreign countries and British possessions, in 1876:—

Port.	Entered.	Cleared	Total.
	Tons.	Tons	Tons.
London	9,074,519	4,503,673	13,578,192
Liverpool	6,380,217	5,587,416	11,967,633
Newcastle and North and South Shields	1,481,874	5,168,330	6,650,204
Cardiff	671,209	2,883,535	3,554,744
Hull	1,691,328	1,334,285	3,025,613
Sunderland	303,820	2,289,710	2,593,530
Southampton	992,447	705,517	1,697,964
Bristol	1,087,602	496,679	1,584,281
Swansea	587,741	992,092	1,579,833
Newport	508,474	959,792	1,468,266
Hartlepool	452,159	956,248	1,408,407

These are almost exclusively mineral ports.

The subjoined table shows the total tonnage of the sailing vessels and steamers registered as belonging to the United Kingdom, at the end of each third year from 1864 to 1876:—

Years.	Sailing Vessels	Steamers.	Total.
	Tons.	Tons.	Tons.
1864	4,930,219	697,281	5,627,500
1867	4,852,911	901,062	5,753,973
1870	4,577,855	1,112,934	5,690,789
1873	4,091,379	1,713,783	5,805,162
1876	4,257,986	2,005,347	6,263,333

During the period 1864-76 the number and tonnage of sailing vessels registered as belonging to the United Kingdom decreased, but the steamers increased from 2490 to 4335, and the table shows that their tonnage nearly quadrupled. The latter fact indicates a doubling of the average tonnage of steamships, the wants of commerce requiring them to be more and more large. Nearly three-fourths of the total shipping of the United Kingdom belongs to England and Wales.

The total tonnage of the United Kingdom, far larger than that of any other country, represents by itself more than one-third of the shipping of all the maritime states of the world.

Ship-building has long been an industry of great importance in England, although of late years it has suffered considerable fluctuations. The principal centres of the industry are the Thames, the Tees, the Tyne, and Sunderland on the east coast, and Liverpool, Barrow, and Whitehaven on the west. A very large proportion of vessels built in recent years are constructed of iron, with the consequence that the ship-building trade has mostly settled in those parts of the coast that are nearest to the iron and coal fields.

In 1874 the total amount of shipping built in England reached 277,984 tons; in 1875, 220,036 tons; and in 1876, 189,840 tons. In Scotland there were built 166,214 tons, and in Ireland 4311 tons in 1876. The numbers do not include ships built on foreign account.

VII. Railways.—Canals and Roads.

Far greater even than the impulse given to the country's foreign commerce by steam navigation has been the vast progress of internal communication effected by railways. The first ordinary roads deserving the name of highways

were made in 1660, and canal-building began in the middle of the following century; but though roads and canals aided materially in raising the commercial and industrial activity of the nation, their fostering agency was very slight compared with that of railways. In the half century during which England has built railways, its material progress has been vastly greater than that of the whole five previous centuries.

The first line of railway on which carriages were propelled by steam engines, that from Stockton to Darlington, fourteen miles in length, was opened September 27, 1825. Although this little line, pioneer not only of England's, but the world's railways, proved a great success, it had no immediate successors of any note till five years after, when the first really important railway, connecting two great centres of commerce, was finished. This was the line from Manchester to Liverpool, opened September 15, 1830, when Mr Huskisson was accidentally killed. As yet no railway had come near the metropolis, but great efforts were made by George Stephenson and his friends to get permission for constructing a line from London to Birmingham. The bill brought into parliament for this purpose met with the most violent opposition, chiefly on the part of the great landowners, who, so far from seeing that the new mode of communication would immensely enhance the value of their properties, loudly proclaimed that the substitution of steam for horse-power would be "the curse and the ruin of England." It took three years to get the bill for the London-Birmingham railway, which was passed at last in the session of 1833, obtaining the royal assent on the 8th of May. The first sod of the great line was cut at Chalk Farm, London, on the 1st of June 1834. Enormous engineering difficulties had to be overcome, originating not so much from the nature of the ground as from intense public prejudice against the new mode of locomotion. Instead of following the course of the old highroad, running along valleys, the line had to be pushed, by numerous viaducts and tunnels, over hollows and under hills, so as to avoid touching any considerable towns. It took five years to construct the railway from London to Birmingham, at a cost of over four millions. Even friends of the railway presaged that such outlay could not by any possibility be remunerative; but the contrary became evident from the moment the line was opened, in 1838. The first great "trunk" line proved a striking success, and its opening settled, without further controversy, the establishment of the new system of intercommunication in England.

All the great railway systems of England sprang into existence within less than ten years after the opening of the London-Birmingham line. Out of the latter grew, in the first instance, one of the largest of companies, the London and North-Western, while the most extensive system, as regards mileage, the Great Western, originated in a line from Paddington, London, to Bristol, for which an Act of Parliament was obtained in 1835, and which was opened in 1841. In 1836, a bill passed the legislature erecting the "Great North of England" Railway Company, from which was developed the now third largest of English railway systems, the North Eastern. A few years subsequently various other Acts were passed, sanctioning the "Midland Counties" and the "North Midland" lines, from which sprang the present Midland system, fourth largest of English railway companies. The construction of railways, up to this time, was confined almost exclusively to England; the work was begun much later in Scotland, and still later in Ireland.

The total length of railways in the United Kingdom at the end of the year 1825, which saw the opening of the first line, was 40 miles, constructed at a cost of £120,000. Five years later, at the end of 1830, there were not more

Early English railways

The first great trunk line.

than 95 miles, built at a cost of £840,925, but at the end of 1835 there were 293 miles, costing £5,648,531. Thus, in the first five years of railway construction, from 1835 to 1830, the mileage doubled; while in the second five years, from 1830 to 1835, it trebled. It quintupled in the next five-yearly period, till the end of 1840, when the total length of miles of railway in the kingdom had come to be 1435, built at a cost of £41,391,634, as represented by the paid-up capital of the various companies. The next five years saw again nearly another doubling of length of lines, for at the end of 1845 there were 2441 miles of railway, created by a paid-up capital of £88,481,376. Not far from a fresh doubling took place in the course of the next quinquennial period, and at the end of 1850 there were 6621 miles of railways, constructed at the cost of £240,270,745. Nearly all the railways opened up to this date were main or "trunk" lines, connecting more or less busy centres of population, the traffic between which was so large as to require double lines. Unlike most European countries up to the present time, England began railway building on a scale commensurate with the importance of the new mode of intercommunication, the leaders of the great enterprise foreseeing clearly the ultimate requirements of their work. It thus came to pass that double lines were made the rule, and single lines the exception. More recently, however, an increase has taken place in the construction of the latter, owing to the extension of short branches from the main lines.

The length of railways open for traffic in the United Kingdom, either with double or single lines, and the amount of authorized capital, were as follows at the end of each fifth year from 1856 to 1876:—

Years	Double or more lines.	Single lines.	Total.
	Miles.	Miles.	Miles.
1856	6,266	2,444	8,710
1861	6,893	3,972	10,865
1866	7,711	6,143	13,854
1871	8,338	7,038	15,376
1876	9,169	7,703	16,872

Growth of railways from 1856 to 1876

Years.	Authorized Capital.		
	Shares and Stock.	Loans and Debentures.	Total.
1856	£282,890,751	£94,877,156	£377,767,907
1861	£322,369,654	£107,503,292	£429,872,946
1866	£466,151,633	£154,412,773	£620,564,406
1871	£451,898,908	£163,827,982	£615,726,890
1876	£549,095,705	£192,706,822	£741,802,527

Nearly three-fourths of the railways of the United Kingdom, and far more than three-fourths of the capital invested in them, fall to the share of England and Wales. The length of lines open for traffic in each of the three divisions of the kingdom, and the amount of authorized capital, was as follows on the 31st December 1876:—

Division.	Double or more lines.	Single lines.	Total.	Authorized Capital.		
				Shares and Stock.	By Loans and Debentures.	Total.
England and Wales	7,591	4,398	11,989	£449,973,593	£161,438,942	£611,412,535
Scotland	1,063	1,663	2,726	£71,595,107	£21,130,250	£92,725,357
Ireland	515	1,642	2,157	£27,527,005	£10,137,630	£37,664,635
United Kingdom	9,169	7,703	16,872	£549,095,705	£192,706,822	£741,802,527

Among the most marvellous effects produced by railways was the incentive given by them to the population to move from one place to another. Before the making of ordinary

roads, that is, previous to the middle of the 17th century, and the old era of packhorses and bridge paths, there was scarcely any movement worth the name; and the immense majority of people had to live and die in the places where they were born, simply through not being able to transport themselves elsewhere, even for a short distance. A change took place when highways came to be made, with stage-coaches rolling along them, at a rate of from six to ten miles an hour. But the accommodation afforded by these new means of travelling was necessarily limited, besides being costly, in time as well as money, and the mass of the people could not avail themselves of it. But what was impossible for "the coach" was the easiest achievement for "the train" of coaches. In "the train," placed upon two longitudinal lines of iron rails, and propelled by steam, the whole nation for the first time obtained freedom of movement. The ancient packhorses carried their hundreds, and the stage-coaches their thousands; but the railways carried their millions—and more millions than ever stage-coaches carried thousands.

The railways carried their first million of passengers in 1833, the year in which Stephenson won his great parliamentary battle in getting the bill for the London-Birmingham line passed. The number of passengers carried per mile in 1832 was 4860, but before other ten years were gone, the number of passengers had not only increased in proportion with the opening of new lines, but more than doubled per mile, and, instead of being under 5000, had in 1842 come to be near 12,000. The following table exhibits the growth of the passenger traffic on the railways of the United Kingdom, giving the length of lines open, the total number of passengers carried, and the number per mile, in every fifth year from 1846 to 1876:—

Years, Dec. 31.	Length of Lines open for Traffic.	Total Number of Passengers.	Number of Passengers Per Mile.
1846	3,036 Miles.	43,790,983	14,423
1851	6,890	85,391,095	12,309
1856	8,707	129,347,592	14,855
1861	10,869	173,773,218	15,988
1866	13,854	274,403,895	19,734
1871	15,376	375,409,146	24,415
1876	16,872	538,681,722	31,928

The table shows, more clearly than could be expressed by any description in words only, the striking changes effected by railways in the migratory habits of the people in the course of a generation. While the number of passengers was little above 14,000 per mile in 1846, it was nearly 32,000 in 1876. The number of passengers carried on the railways of the United Kingdom in the year 1876 was equal to four times the population of Europe, and more than half the estimated population of the globe.

Considerably more than four-fifths of the passenger traffic on the railways of the United Kingdom is in England and Wales. The number of railway passengers in England and Wales, in Scotland, and in Ireland, and the numbers travelling by each class of railway, were as follows in the year 1876:—

Divisions.	1st Class Passengers.	2nd Class Passengers.	3rd Class Passengers.	Total.
England and Wales	38,302,841	58,949,892	383,686,658	480,939,391
Scotland	4,693,843	3,319,741	31,978,057	39,991,641
Ireland	1,862,382	4,208,562	11,285,319	17,356,263
United Kingdom	44,859,066	66,478,195	426,950,034	538,287,295

Passenger traffic in 1876.