limits of any harbour; canal boats and barges without sails or motive power employed entirely within any State; barges and boats on the rivers and lakes of the United States which do not carry passengers and do not trade to any foreign territory. None of these vessels are registered, enrolled or licensed. A census of shipping taken in 1889 revealed the fact that at that date the tonnage of these undocumented vessels amounted to just half the total shipping of the United States; since then their numbers have greatly decreased because of the improved means of transport by rail.

The distribution of the total documented shipping on the coasts of the United States in 1909 is shown by Table VI. The Atlantic

|  |  |  |
| --- | --- | --- |
| Table VI.—*United States Shipping documented in 1909.* | | |
|  | No. of Ships. | Tons. |
| Atlantic and Gulf Coasts. Porto Rico ....  Pacific  Hawaii  Northern Lakes .  Western Rivers . | 17,203  83  3.378  *43*  3,199  1,782 | 3,500,394 8,740 915,357  19,120  2,782,481  162,663 |
| Total | 25,688 | 7,388,755 |

Coasts employ 67% of the number and 47% of the tonnage; the Great Lakes 12% of the number and nearly 38% of the tonnage. The total includes a great number of wooden sailing vessels as shown by Table VII., which also shows that the coasting trade employs over 1,000,000 tons of wooden steamships and over 3,000,000 tons of steel steamships (Enrolled and Licensed vessels), while the steel

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table VII.—*Details of Ships documented in United States in 1909.* | | | | | | |
|  | Steam. | | Sailing. | | Barges. | |
| No. | Tons. | No. | Tons. | No. | Tons. |
| Registered—  Wood  Metal  Enrolled and Licensed—  Wood  Metal | 349  149  9,431 1,712 | 71,474 507,052  1,084,690  3,086,008 | 448  22  9135  107 | 185, 728 45,330  1,281,064 198,954 | 644  21  2S04  121 | 72,277  S.644  687,924 81,659 |
| Total Documented Vessels . | 11,641 | 4,749,224 | 9712 | 1,711,076 | 3590 | 847,504 |
| Grand Total .... | . 25,688 vessels. | |  | 7,388,755 Tons. | | |

steamships in the Foreign Trade only reach a total of just over 500,000 tons (Registered Vessels).

Though the American Mercantile Marine has greatly varied in the rate of its growth (see Table VIII.), very great increases have taken place from time to time, and after 1880 the average rate of increase was very considerable, the increase in thirty years amounting to 3,300,000 tons or over 80%. In the nine years 1900-1909 the increase was 2,220,000 tons, which is more than 40% of the total in

|  |  |  |  |
| --- | --- | --- | --- |
| Table VIII.—*Growth of United States Shipping.* | | | |
| Year. | Total Tons. | Increase in Ten Years. | |
| Documented. | Tons. | Percentage. |
| 1790 | 478,377 |  |  |
| 1800 | 972.492 | +494.115 | + 103∙3 |
| 1810 | 1,424,783 | +452,291 | ÷46∙5 |
| 1820 | 1,280,167 | — 144,616 | —10· 1 |
| 1830 | 1.191.776  2,180,764 | -88,391 | -6∙9 |
| 1840 | +988,988 | +82∙9 |
| 1850 | 3,535.454 | +1.354,690 | ÷62∙1 |
| 1860 | 5.353.868 | +1,818,414 | +5i∙4 |
| 1870 | 4,246,507 | -1,107,361 | —2o∙6 |
| 1880 | 4,068,034 | -178,473 | -4∙2 |
| 1890 | 4,424,497 | +356,463 | +8∙8 |
| 1900 | 5,164,839 | +740,342 | + 16∙8 |
|  |  | Increase in Three Years. | |
|  |  | Tons. | Percentage. |
| 1903 | 6,087,345 | +922,506 | +17∙9 |
| 1906 | 6,674,969 | +587,624 | + 9-7 |
| 1909 | 7.388.755 | +713.786 | +JO∙7 |

1900. The increase of the general commerce of the United States in these periods was, however, so vast that, notwithstanding the great increases of tonnage, increasing proportions of the tonnage were absorbed by the home or coastwise trade, and the percentage of United States shipping carrying United States commerce to foreign ports was steadily reduced, as shown by Table IX.

From 1895 to 1908 very great progress was made in the output of ships in the United States; in 1901 a maximum of 483,489 tons was

reached; decreases occurred until 1905, when a minimum of 330,316 tons was reported, but a rapid recovery took place; and in 1908 the unprecedented American total of 614,216 tons was made. In 1909 the output fell off. Out of a total of 1247 vessels of 238,090 tons, built and documented during the year ending June 30, 1909,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table IX.—*Additions to and Employment of United States Shipping.* | | | | |
|  |  | Average Tonnage | Average percentage | Average percentage |
|  | Period. | of Ships built per | of United States | of United States |
|  | Annum in the United States. | Commerce carried in United States Ships. | tonnage trading in United Stales Ports. |
|  | 1810 | 102,452 |  |  |
|  | 1810-1820 | 89.797 |  |  |
|  | 1820-1830 | 89,372 | 90∙2 | 88-2 |
|  | 1830-1840 | 118,960 | 83∙9 | 68∙7 |
|  | 1840-1850 | 185,309 | 78∙I | 66∙6 |
|  | 185o-lδ6o | 366,603 | 71∙2 | <⅛4 |
|  | 1860-1870 | 299,690 | 38· I | 5o∙4 |
|  | 1870-1880 | 253.800 | 26∙2 | 29∙o |
|  | 1880-1890 | 220,197 | I5∙2 | 21∙o |
|  | *1*890-1900 | 235∕>93 | II∙2 | 22∙5 |
|  | I90I-I903 | 462,824 | 8-7 | 22∙o |
|  | 1904-1906 | 375.868 | n∙5 | 22∙3 |
|  | 1907 | 47».332 | 1o∙6 | 22∙o |
|  | 1908 | 614,216 1 | 9∙8 | 22 ∙o |
|  | 1909 | 238,0902 | 9\*5 | 22\*0 |
|  | 1 Maximum recorded. | | 2 Lowest for ten vears. | |

61,000 tons consisted of barges and canal boats, nearly 30,000 tons consisted of sailing vessels, 798 vessels of 47,353 tons are classed as river steamers, 17 steamers of 84,428 tons were built in the Great Lakes, and only 6 steam vessels of 16,427 tons were built for ocean trade, while no vessel was registered as built for the foreign trade.

*Canadian Shipping.—A* steamboat service between Montreal and Quebec was commenced in November 1809, two years before the “Comet ” was set to work on the Clyde, and in 1816 the steamer “ Frontenac ” commenced running on the Lakes and a number of other vessels followed. During the middle of the 19th century Canada turned out large numbers of wooden ships, the output in 1874 being 487 ships of 183,010 tons. As wood shipbuilding dimin- ished the output fell off. In 1900 only *29* steam and sailing ships of over 100 tons were built, amounting in the aggregate to 7751 tons. Afterwards improvements took place, and in 1907 59 vessels of 38,288 tons were launched. Among the largest ships built in Canada are the passenger and freight vessel “ Harmonic ” of 5240 tons gross, and the “ Midland Prince,” a cargo vessel of 6636 tons gross—both built at Ontario. Smaller vessels are built to pass through the canals from the lakes to the sea, such as the “ Haddington ” of 1603 tons built at Toronto.

*Japanese Shipping.*—Recent years have seen a considerable development of shipbuilding in Japan. Several small vessels were built previous to 1898, but in that year the “ Hitachi Maru,” a steamer of 6000 tons, was built by the Mitsu Bishi Works.

Lloyd’s Register Reports show that in the five-year period 1895-1899 there were launched 61 ships with a tonnage of 45,661; in 1900-1904, 279 ships (tonnage 138,052); and in 1905-1909, 414 (tonnage 252,512).

The figures quoted by various authorities for the amount of shipping owned in Japan vary considerably, particularly as regards sailing vessels. Large numbers of wood sailing vessels are, however, passing away, their places are being taken by steel steamers of the highest class in great variety and increasing tonnage, and the finest and fastest vessels now on service in the Pacific Ocean are Japanese liners built in Japan. Lloyd’s Register shows that in 1900 Japan possessed 503 steam vessels of 524,125 tons gross, while in 1908 she possessed 861 steam vessels of no less than 1,150,858 tons—an increase of 120% in eight years.

*German Shipping.—*For many years the mercantile marine of Germany has progressed at a very great rate, large numbers of vessels being built in Germany and in the United Kingdom for German owners. The average output in Germany per annum from 1895 to 1899 was 84 ships of a total tonnage of 139,000 tons; from 1900 to 1904, 114 ships of 204,600 tons; and from 1905 to 1909, 149 ships of 241,000 tons. The total net tonnage owned in 1870 was about 982,000 tons, and this was doubled by 1900, *i.e.* in thirty years. The total tonnage of Germany in 1900 was 2,905,782 tons, taking gross steam and net sailing tonnage; in 1910 the total on the same basis was 4,333,186 tons, an increase of nearly 50% in the ten years.’

IV. Merchant Vessels

*Sailing Ships.—*Generally speaking, so far as the distribution of sails is concerned, except as regards the abolition of studding-sails, the sailing ships of to-day differ little from those which existed in the middle of the 1 9th century, and in the case of many types at a much earlier period. The change from wood to iron and steel resulted, of course, in some changes