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The MERCANTILE NAVIES of the WORLD in the YEARS 1870 and 1874 compared. By HENRY JEULA, ESQ., F.S.S., F.R.G.S.

[Read before the Statistical Society, 16th March, 1875.]

WE are indebted to the Administration of the Bureau Veritas for the publication of the "General List of Merchant Shipping of all "Nations," comprising *sea-going* sailing vessels and steamers, so far as information had been obtained.

It is manifest that these volumes, while constituting a most acceptable addition to our knowledge, do not pretend to absolute correctness, and relating only to the *sea-going* vessels of each country named, of necessity present contrasts with the entire number and tonnage of any given nation.

Allowing for all such elements of disturbance, the area of observation is so wide, and the number of vessels and amount of tonnage so large, as to render a comparative statement not only interesting but valuable.

From the edition of this work for the year 1870, when it was first published, and from that for 1874, the last issued, I glean the following particulars of the remarkable changes which have occurred in the interval, showing how steamers have supplanted sailing vessels, and how marvellously some of the countries enumerated have progressed, relatively, in their carrying power.

The variations between different nations are striking and significant. Thus, American *sailing vessels* decreased 2·22 per cent. in number, but 9·12 per cent. in tonnage; while Austrian increased 12·09 per cent. in number, but only 3·13 per cent. in tonnage; Russian increased in number 9·34 per cent., but decreased in tonnage by 4·28 per cent.; and Swedish decreased by 1·30 per cent. in number, but increased in tonnage by 6·23 per cent.

Those countries which had increased in both number and tonnage of *sailing vessels* were Austria, Greece, Italy, Norway, Portugal, and a few others included in the term "various;" while the countries which had decreased in both number and tonnage were America, Belgium, Great Britain, Denmark, Holland, France, Germany, and Spain.

The *sailing vessels* of most of the nations named in these volumes appear to have become, on the average, smaller, but those of the

following countries appear to have increased in size, viz. :—Denmark, Holland, France, Germany, Italy, Norway, Spain, and Sweden.

But now the remarkable contrast occurs between *sailing vessels* and *steamers*.

Every country enumerated had increased in both the number and the tonnage of its *steamers*, in some instances to an almost incredible extent, were it not for the fact that until recently their mercantile steamers had been but few.

It is to be noticed that while the decrease in the aggregate tonnage of *sailing vessels* has been about 80 per cent. in excess of the decrease in number, the increase in the tonnage of *steamers* has been about 200 per cent. in excess of the increase in their number.

The largest relative increase in number of *steamers* pertains to Belgium, Norway, Russia, and Sweden; while in increase of tonnage, Belgium, Denmark, Holland, Germany, Italy, Norway, Russia, Spain, and Sweden bear the palm.

The tables I annex are threefold.

First, Sailing vessels. Their nationality, number, tonnage, and average size, in tons, in 1870 and in 1874, with the percentage of each country upon the totals of both number and tonnage at the respective periods.

Secondly, Steamers. A table similar to the above; and

Thirdly. A table showing the *proportionate increase or decrease* for each nationality in 1874, as compared with the year 1870.

From this comparison it results that while the aggregate of *sailing vessels* has decreased by 3,229, or 5·43 per cent. in number and 1,518,868 tons, or 9·47 per cent. in tonnage, *British sailing vessels* have decreased by 2,627, or 11·34 per cent. in number and by 1,609,390 tons, or 23·01 per cent. in tonnage; and while the aggregate of *steamers* has increased by 1,233, or 29·84 per cent. in number and by 2,433,456 tons, or 87·11 per cent. in tonnage, *British steamers* have increased by 576, or 23·74 per cent. in number and by 1,364,006 tons, or 82·58 per cent. in tonnage.

Putting *sailing vessels* and *steamers* together, the aggregate had decreased in number by 1,996, or 3·14 per cent. but increased in tonnage by 914,588 tons or 4·86 per cent.; while *British vessels*—*sailing and steam* together—had decreased in number by 2,051, or 8·01 per cent. and in tonnage by 245,384 tons, or 2·84 per cent.

The very large increase alike in the number and average size of *steamers*, and the considerable decrease in number and apparent reduction in the average size of *sailing vessels*, with the relative progress of various nations shown in the following tables, seem to indicate modifications in ownership and employment, the full scope and significance of which it may be difficult or, perhaps, impossible at present to estimate, but I trust the subject will be considered of

sufficient interest and importance to justify my placing this short comparative paper before the Fellows of the Statistical Society and the readers of its *Journal*.

THE MERCANTILE NAVIES OF THE WORLD.

Three tables compiled from the "General List of Merchant Shipping of all Nations," issued by the Bureau Veritas.

TABLE I.—*Sailing Vessels, their Nationality, Number, Tonnage, and Average Size in Tons, in 1870 and 1874; with the Percentage of each Country upon the Totals of both Number and Tonnage at the respective Periods.*

Nationality.	Number.		Percentage on Total Number.		Average Size in Tons.		Tonnage.		Percentage on Total Tonnage.	
	1870.	1874.	1870.	1874.	1870.	1874.	1870.	1874.	1870.	1874.
American	7,025	6,869	11·80	12·19	341	318	2,400,607	2,181,659	14·96	15·02
Asiatic.....	...	35	—	0·06	—	386	—	13,527	—	0·09
Austrian	852	955	1·43	1·70	373	343	317,780	327,742	1·98	2·26
Belgian	72	51	0·12	0·09	363	336	26,148	17,158	0·16	0·12
British.....	23,165	20,538	38·92	36·48	302	262	6,993,153	5,383,763	43·59	37·08
Central Ame- rican	—	138	—	0·25	—	338	—	46,580	—	0·32
Danish.....	1,415	1,239	2·38	2·20	130	140	183,510	173,480	1·14	1·19
Dutch	1,690	1,418	2·84	2·52	263	272	444,111	385,301	2·77	2·65
French	4,968	3,780	8·35	6·72	180	195	891,828	736,326	5·56	5·07
German	4,320	3,483	7·26	6·19	242	246	1,046,044	852,789	6·52	5·87
Greek	1,860	2,063	3·13	3·67	202	197	375,680	406,937	2·34	2·80
Italian	3,395	4,343	5·70	7·72	267	283	907,570	1,227,816	5·66	8·45
Norwegian	3,652	4,464	6·14	7·93	271	302	989,882	1,349,138	6·17	9·29
Portuguese	368	410	0·62	0·73	236	226	87,018	92,808	0·54	0·64
Russian	1,306	1,428	2·20	2·54	265	232	346,176	331,350	2·16	2·28
South American	—	219	—	0·39	—	378	—	82,761	—	0·57
Spanish	3,036	2,674	5·09	4·75	180	191	545,607	509,767	3·41	3·51
Swedish	1,930	1,905	3·24	3·38	176	190	340,188	361,368	2·12	2·49
Turkish and Egyptian....	—	277	—	0·49	—	157	—	43,360	—	0·30
Various	464	—	0·78	—	317	—	147,196	—	0·92	—
Total	59,518	56,289	100·00	100·00	270	258	16,042,498	14,523,630	100·00	100·00

TABLE II.—*Steamers, their Nationality, Number, Tonnage, and Average Size in Tons, in 1870 and 1874; with the Percentage of each Country upon the Totals of both Number and Tonnage at the respective Periods.*

Nationality.	Number.		Percentage on Total Number.		Average Size in Tons.		Tonnage.		Percentage on Total Tonnage.	
	1870.	1874.	1870.	1874.	1870.	1874.	1870.	1874.	1870.	1874.
American	597	613	14.47	11.43	861	1,254	513,792	768,724	18.39	14.70
Asiatic.....	—	6	—	0.11	—	576	—	3,459	—	0.07
Austrian	74	81	1.79	1.51	599	1,025	44,312	83,039	1.59	1.59
Belgian	14	39	0.34	0.73	746	1,039	10,442	40,536	0.37	0.78
British.....	2,426	3,002	58.71	55.96	681	1,005	1,651,767	3,015,773	59.13	57.70
Central Ame- rican	—	9	—	0.17	—	592	—	5,332	—	0.10
Danish.....	44	67	1.06	1.25	275	582	12,085	38,976	0.43	0.75
Dutch	82	107	1.98	1.99	481	876	39,405	93,723	1.42	1.79
French	288	315	6.97	5.87	739	1,012	212,976	318,757	7.62	6.10
German	127	220	3.07	4.10	827	1,222	105,131	268,828	3.76	5.14
Greek	8	9	0.19	0.17	408	592	3,267	5,329	0.12	0.10
Italian	86	110	2.08	2.05	423	827	36,358	91,011	1.30	1.74
Norwegian	26	112	0.63	2.09	282	456	7,321	51,103	0.26	0.98
Portuguese.....	18	23	0.43	0.43	729	802	13,126	18,452	0.47	0.35
Russian	62	144	1.50	2.68	458	771	28,422	111,072	1.02	2.13
South American	—	72	—	1.34	—	728	—	52,387	—	1.00
Spanish	148	212	3.58	3.95	492	733	72,845	155,417	2.61	2.97
Swedish	83	195	2.01	3.63	224	397	18,633	77,440	0.67	1.48
Turkish and Egyptian.....	—	29	—	0.54	—	949	—	27,530	—	0.53
Various	49	—	1.19	—	481	—	23,550	—	0.84	—
Total	4,132	5,365	100.00	100.00	676	974	2,793,432	5,226,888	100.00	100.00

TABLE III.—*Showing the Percentage of Increase or Decrease in Number and Tonnage of Sea-going Merchant Sailing Vessels and Steamers of each Country named, in 1874 as Compared with the Year 1870.*

Nationality.	Sailing Vessels.				Steamers.			
	Number.		Tonnage.		Number.		Tonnage.	
	Percentage of		Percentage of		Percentage of		Percentage of	
	In-crease.	De-crease.	In-crease.	De-crease.	In-crease.	De-crease.	In-crease.	De-crease.
American	—	2'22	—	9'12	2'62	—	49'62	—
Austrian	12'09	—	3'13	—	9'46	—	87'40	—
Belgian	—	29'17	—	34'38	178'57	—	288'20	—
British	—	11'34	—	23'01	23'74	—	82'58	—
Danish	—	12'44	—	5'47	52'27	—	222'52	—
Dutch	—	16'09	—	13'24	30'49	—	137'85	—
French	—	23'91	—	17'44	9'37	—	49'67	—
German	—	19'38	—	18'47	73'23	—	155'71	—
Greek	10'91	—	8'32	—	12'50	—	63'12	—
Italian	27'92	—	35'29	—	27'91	—	150'32	—
Norwegian	22'23	—	36'29	—	330'77	—	598'03	—
Portuguese	11'41	—	6'65	—	27'77	—	40'58	—
Russian	9'34	—	—	4'28	132'25	—	290'80	—
Spanish	—	11'92	—	6'57	43'24	—	113'35	—
Swedish	—	1'30	6'23	—	134'94	—	315'61	—
Various	44'18	—	26'52	—	136'73	—	276'68	—
Total	—	5'43	—	9'47	29'84	—	87'11	—

DISCUSSION *on* MR. JEULA'S PAPER.

SIR JAMES ANDERSON said he hardly knew what the author wished to be inferred from the statistics given, because it appeared to him, that unless the conditions which caused the decrease or increase of tonnage were taken into consideration, no conclusion could be arrived at. For example, a steamer would make three Indian voyages for one sailing ship; therefore the tonnage was at once increased, that is, the tonnage by which the nation benefited. A steamer would now make eight or nine Mediterranean voyages in the year. He had, himself, made eight or nine voyages to America in the same period, whereas two and a half voyages were considered a good year's work for a clipper ship, so that the carrying power and the commerce of the nation might be very largely augmented, although the tonnage might be very much decreased. He thought that the great falling off in America was due to the protective laws of that country. They could not buy their ships so cheap as we in this country could by 30 per cent. For example, at the present moment, he believed that 100 large steamers in this country, could be bought at 25 per cent. less than they would have cost three or four years ago. America could not, on account of her protective laws, take advantage of this condition of affairs, and come to this country and buy shipping; besides they had not recovered from the great civil war. The same might be said of France, which had not recovered from the war with Germany. Therefore, he did not see what was conveyed by the paper. Giving the increase or decrease of tonnage, did not appear to be informing the meeting anything, unless the conditions which had produced these results were taken into account.

Dr. FARR said that this was a subject which he investigated some time ago with Mr. Vian, of the Accidental Insurance Company, which had under consideration the advisability of insuring merchant seamen; and they had obtained returns through the Registrar-General. He agreed to some extent with Sir James Anderson that some other element should be introduced to show the significance of the author's statistics; but he could not agree that they were unimportant; as they were facts in themselves. It was a fact that there were so many ships in 1870 and so many in 1874. There was also given the difference in tonnage in those years; and he thought Sir James Anderson would agree with him that that was not an unimportant fact. The tonnage did three times or twice the amount of work in 1874 that it did in 1870. That was a most important fact. This had arisen from the change in the form of shipping from sailing vessels to steamers. There was the same amount of tonnage, but that tonnage carried four or five or ten times as much of cargo as it formerly did the same distance. The usual calculation was a foot per pound. But here another unit was

wanted, such as the ton of goods carried per mile or something like that. He did not know whether Mr. Jeula or Sir James Anderson could say if it was possible to introduce such an element as would give the amount of work done. In a scientific point of view that was indispensable.

Mr. KENNELLY thought the facts contained in the paper must be very valuable. The table showed that the character of the sailing vessel had decreased by a percentage of 5·43 and 9·47 per cent. in tonnage; and there was a large increase of 82·58 per cent. in tonnage, and 23·74 per cent. in number of British steamers, in British sailing vessels there was a decrease of 23·01 per cent. in tonnage, and 11·34 per cent. in number. These were very clear facts, and admitted of no doubt as to the decrease in the carrying capacity of the sailing vessel and the increase in carrying capacity of the steamer. For instance, the Suez Canal was one channel through which the most rapid transit was made from the East to London and by steamer only. The traffic carried round the Cape was chiefly by sailing vessels. There must, therefore, as Sir James Anderson and Dr. Farr had pointed out, be a relative increase of carrying power with the increase of steam-power, because there would be a swift carrier over a short passage making many runs, showing the great increase in the tonnage of the swift vessel over the decrease of the slow carrier over a long voyage, and clearly there must be a very largely increased tonnage carried.

Mr. LUMLEY said he should like to know if the returns were accurate, because on looking at one of the tables he found that in 1870 the Norwegian tonnage was put down at 7,321, and in 1874 at 51,103; and in Russia, in 1870, it was 28,422, and in 1874 111,072 tons. There seemed to him to be an enormous difference between the two periods.

Mr. C. WALFORD said he had recently had occasion to make an investigation into the question of tonnage, for the purposes of a new company, who contemplated insuring passengers by steamers and sailing vessels. He estimated the capacity of steamers to be four times that of vessels for any particular traffic. That rule might not, perhaps, meet the point Mr. Jeula had in view, but it would apply to certain voyages.

Mr. JEULA, in reply, said, in reference to the enquiry made by Mr. Lumley as to the correctness of the figures, that the documents from which he had taken them were the only ones available for a comparison of that kind. He was aware that last year the Board of Trade had brought out a statistical abstract in relation to foreign countries; but he had only been able to obtain the abstract up to 1872. As 1870 was the first year in which the work referred to had been published, and 1874 was the date of the last issue, he thought it might be of sufficient interest to take the results as given in that public volume, the contents of which, he thought, were mainly correct. The notable increase in the northern nations

in the number and tonnage of steamers and sailing vessels seemed to him so very important that he thought it might not be out of place to call attention to the fact. In reference to the remarks of Sir James Anderson, that gentleman would see that, taking steamers of an average capacity and of average power in relation to the different countries, the table would give a tolerable approximation as to the relation of this country to the rest of the world in reference to steam-carrying power. If one steamer could make three or four voyages, another might do so; and, therefore, it seemed to him that the fact of the tonnage of the world had increased by 87·11, while the tonnage of this country had increased 23·74, was unworthy of notice. In relation to the sailing vessels, the total decrease in number was 5·43, while the decrease in this country was 11·34. The total decrease in tonnage was 9·47, while the decrease in Great Britain was 23·01. These were facts that Dr. Farr would perhaps have no objection to add to the other facts he had mentioned. In reference to the remarks made by Dr. Farr, he (Mr. Jeula) would be only too glad to see some scientific mode adopted for treating statistics of this description. He hoped that any attempt, however humble, to call attention to the statistics of maritime shipping, would not be undervalued.

The PRESIDENT, in moving a vote of thanks to the author, said, that in looking over the tables, he observed that, in nations similarly circumstanced, there was a peculiar similarity in the increase of steamers. This would render it probable that the figures were correct.