against, in the following year, to the United Kingdom, 656 vessels and 1,180,349 tons, and to the United States 115 vessels and 84,832 tons. These statistics have reference only to the vessels employed in foreign trade, for they do not include the lake tonnage built by the United States, which, in 1888 included fifty-nine vessels and 100,950 tons, and in 1889 fifty, six vessels and 124,750 tons. If this production were added to that shown in the statistics as applying to the United States, the industry of that country would stand next that of the United Kingdom, and almost double that of Germany.

No doubt that shipbuilding section of the United States embraced in the great lakes already leads any other shipbuilding section of any other nation in the production of vessels; and when it is remembered that these vessels are employed wholly in the internal trade of that country, in which no foreign vessel may engage, the policy of the United States in thus excluding all foreign vessels is manifest. Protection is fast making that country the greatest maritime country of the world—greatest in point of tonnage—seeing that it is now ahead of all other nations except Great Britain, whom she is now pushing very closely.

THE IRON AND STEEL INSTITUTE.

On invitation of the American Institute of Mining Engineers and others, the British Iron aud Steel Institute, whose members represent the metallurgical interests of the United Kingdom, held their annual meeting in New York City, on Wednesday, October 1st, it being expected that the meeting would be continued for three days. Meetings of this Institute have heretofore been held in France, Germany and Austria. The Institute was first organized rather more than twenty years ago, its object being to add to and encourage a scientific knowledge of the production of iron and steel. Other meetings than that at New York will be held in Philadelphia, Pittsburg, Chicago and other American cities. Leaving Chicago the convention will divide, one part going to Alabama, Kentucky, Virginia and Tennessee, the other to the American iron and copper mines on Lake Superior; and on their eastward trip from these a visit will probably be made to the copper and nickel mines of the Sudbury district, Ontario. The visitors will be accompanied by escorts of American gentlemen interested in metallurgical works; and it is probable that Toronto will be favored with the presence of these distinguished men.

In 1864 Mr. Swank, of the American Iron and Steel Association, published in the *Bulletin* the following article regarding the British iron industry and how it was built up by British inventive genius, which all this time cannot but be interesting to our readers:—

The eighteenth century marked a new era in all those branches of manufacturing industry in which the British people have become prominent. It was the era of machinery, which then began to receive general attention as a substitute for hand labor. This era gave to the people of Great Britain the manufacture of India cotton goods, and it largely increased their woolen industry and also wonderfully developed their iron industry. It was in the eighteenth century that Great Britain became the first manufacturing nation in the world in consequence of her quick appreciation of the value of labor-saving machinery; in the preceding century four-fifths of all British workingmen were still farmers or farm laborers.

During the latter part of the eighteenth century and the whole of the nineteenth century down to the present time no other country has occupied so conspicuous a position in the manufacture of iron and steel as Great Britian. Spain and Germany had both been more prominent in the production of these essentials of modern civilization, but Great Britian spurned all opposition when she began to make pig iron in 1735 with the aid of mineral fuel and powerful blowing engines. She had iron ores and coal in abundance, and her people had applied to the utilization of these products their invincible energy and their newly developed inventive genius. Thenceforward the lack of timber for charcoal, which had previously almost destroyed her once flourishing iron industry, was no longer lamented and was but little felt. She was afterwards the first nation to refine pig iron in puddling furnaces and to make bar iron in rolling mills. France, Germany and other Continental countries might have substituted mineral coal for charcoal, invented the puddling furnace, or perfected the rolling mill and the steam engine, but none of them did.

The whole world is greatly indebted to England and Scotland for the inventions which gave a fresh impetus to the manufacture of iron in the eighteenth century. Payne and Hanbury, who first succeeded in rolling sheet iron; Darby, who first successfully and continuously used coke in the blast furnace; Huntsman, who invented the process of making steel in crucibles; Smeaton who invented cast-iron blowing cylinders; and Cort, who invented grooved rolls and the puddling furnace, were Englishmen; while Watt, who perfected the steam engine, was a Scotchman. It is also indebted to the same countries for most of the inventions of the present century which have further developed the manufacture of iron and increased the demand for it, and which have almost created the manufacture of steel. Stephenson, the Englishman, improved the locomotive in 1815, and in 1825 the first passenger railroad in the world was opened in England, his locomotive hauling the trains. The railroad is the greatest of all the consumers of iron and steel. Neilson, the Scotchman, invented the hot-blast in 1828; Crane, the Englishman, applied it to the manufacture of pig iron with anthracite coal in 1837; Nasmyth, the Scotchman, invented the steam hammer in 1838 and the pile driver in 1843; and Bessemer, the Englishman, invented in 1855 the process which bears his name and is the flower of all metallurgical achievements—a share in the honor of this invention, however, being fairly due to the co-operating genius of Robert F. Mushet, also an Englishman, but born of Scotch parentage. The Siemens regenerative gas furnace, which has been so extensively used in the manufacture of iron and steel, is also an English invention, although the inventors, Sir William and Frederick Siemens, while citizens of England, were natives of Hanover, in Germany.

It is only just to add that Sir Henry Bessemer, although born in England, is the son of a French refugee who settled in England during the French Revolution of 1789, and that Benjamin Huntsman, the inventor of the process for manufacturing cast steel in crucibles, was the son of German parents, although himself born in England. Mr. Goran F. Goransson, of Sandviken, Sweden, also assisted to perfect to Bessemer process. It was, however, enterprising and sturdy England which nursed the genius of the great inventors we have mentioned who where of Continental birth or extraction, and it was in England that the ripe fruits of their inventions were first abundantly gathered.

That Great Britain at the beginning of her manufacturing activity did not seek to extend the influence of her new light and life to other countries, but by various acts of Parliament sought to prevent the introduction of her inventions and the immigration of her skilled artisans into those countries, is not here a subject of comment; nor is the strict adherence of Great Britain to a policy of protection to home industries by customs