

pair she required was an annual coat of paint, and perhaps new decks. But wooden ships constantly required repairs, and every four years had to be resheathed with copper or yellow metal, and besides incurred the risk of dry rot. Then came, in the seventies, the compound engine, which so economised fuel that steam ships were enabled to compete successfully with wooden ships, all over the world.

Then the manufacture of steel had been so improved and cheapened by the Siemens-Martin, or open hearth process, that in 1877 a ductile material, far superior in strength to iron was used, and after severe tests, Lloyd's agreed to allow a reduction of twenty per cent in the sizes of scantling required for iron ships. The result of this was that steel ships were not only cheaper than iron, but carried far more dead weight as cargo. In 1879 the Allans built the *Buenos Ayrean* entirely of steel, and the Cunards followed with the great *Servia*. Ten per cent. of the ships built in Great Britain were at once constructed of steel. To-day ninety-seven per cent. are built of that material.

The price of steel, too, continued to fall after 1873, and to-day ship plates are quoted at £4 12s. 6d. to £4 15s. per long ton, less than one half their price in 1873, so that large steel sailing ships have been built at £10 stg. per ton, ready for sea with an East India outfit, a price which does not exceed the cost of a nine year Quebec-built ship coppered and with a complete outfit.

The final result is that wooden ship building in Quebec is dead beyond recall; the yards are deserted; and every trade in the Ancient City feels it deeply.

But why should not Quebec build and engine steel steamships?

The best answer to this question may be found in the history of the great "William Cramp and Sons, Ship and Engine Co., of Philadelphia," which has recently been published.

William Cramp, the founder, commenced wooden shipbuilding in a small way at Philadelphia in 1830, employing less than one hundred hands. His early ships rarely exceeded 300 tons, but in forty years he built 207 vessels. In 1872, seeing that the substitution of iron for wood was inevitable, he formed a joint stock company, with a capital of \$500,000, to build iron ships. The company, up to this date, has built, or is building, 75 iron and steel ships, including 26 war ships; and in addition 141 marine engines have been constructed.

The company's capital is now five million dollars; the building yard and accessories cover thirty-one acres of ground; the company owns five wet docks, a dry dock 462 feet long, a marine railway, an ordnance plant, and a great floating derrick capable of lifting 125 tons. It gives employment to 5,600 hands, and its weekly pay roll amounts to \$54,000. It is now finishing two ocean greyhounds, the *St. Louis* and the *St. Paul*, of 10,700 tons each, to compete with the *Campania* and *Lucania*.

Again, a few years ago not a single iron or steel steamship had been built in Ireland. To-day, one firm alone, Harland and Wolff, of Belfast, the former the son of a Yorkshire physician, the latter a German, trained in Manchester, are said to employ close upon ten thousand hands, to whom about \$70,000 a week is paid in wages. The works have thirteen building slips, on which some of the finest and fastest steamships afloat have been built, including the now celebrated *Teutonic* and *Majestic* of 9,500 tons each, and the firm has a world-wide fame. In 1892 they launched 68,000 tons of shipping, the largest amount of tonnage turned out of any one yard in the world.

Now, I propose to show that Quebec is better situated to-day for steel ship building, not only than Philadelphia or Belfast, but in some respects, even better than Glasgow.