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O. D. MUNN, S. H. WALES, A. E. BEACH.

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ALTERING OUR NAVAL VESSELS.

It seems that Stevens' unfinished floating battery, at Hoboken, about which so many newspaper paragraphs have been published, has been the means of effecting a great revolution in the principal navies of the world. The London *Quarterly Review* says that the experiments made by Mr. Stevens at the expense of the United States government, in 1845, first demonstrated that wrought iron plates six inches thick form a perfect shield against the force of cannon balls; that Mr. Stevens communicated this fact freely to the engineers of England and France during his visit to Europe; that this knowledge led to the construction of the iron-plated floating batteries, the manifest usefulness of which, during the Crimean war, prompted the Emperor Louis Napoleon to build the fleet of iron-plated vessels which is now in process of construction in France. It is well known that this movement of France is being followed both by England and Russia, and thus the three leading naval powers of the world are providing themselves with fleets of iron-plated ships.

But our own government, having furnished the knowledge which has led to this great revolution in the construction of naval vessels, is plodding along, some ten years behind the times, and is just about to expend more than three millions of dollars in changing our old sailing ships into steam propellers. It is to be presumed that the Commissioners who examined this question ascertained all the facts bearing upon the subject which were known at the time of making their report, but at that time the brilliant success of *La Gloire*, the pioneer of the new French fleet, had not been demonstrated, and the extensive experiments now being made in England and France are developing knowlege of the subject so rapidly that it may be well for Congress to reconsider the matter before proceeding further with the contemplated change in our navy.

In the first place, it is pretty well settled that iron ships are better than wooden ones for the ordinary sailing rig; and they unquestionably possess peculiar advantages if they are to be driven by screw propellers. It is almost impossible to make a wooden ship with a fine run, such as a propeller requires, which shall, at the same time, be strong enough to bear the strain exerted by the screw. If we are to have even unplated screw ships, had we not better construct new ones of iron?

But a whole fleet of unplated vessels are completely at the mercy of one of the new iron-plated ships. A very few of the terribly destructive shells now in use will destroy any vessel that has no protection against them. By means of rifled cannon elongated shells can be thrown which will explode at the instant of contact, and one of these, bursting in the side of a ship, makes a hole as big as a door. Some of these missiles are filled with a burning fluid which is set on fire and scattered in every direction by the explosion. But perhaps the most destructive of all implements of warfare is the "carcass," which is a shell filled with molten iron. On striking a ship, the red-hot liquid runs down between the timbers, setting the ship on fire so extensively as almost to preclude the possibility of putting it out.

The statement may be startling, but it is made by high naval authority and is entirely credible, that a ship of war provided with these shells and with suitable guns for firing them would, in one minute, effect the destruction of any wooden vessel afloat. Two hostile wooden ships thus armed, meeting upon the ocean would inevitably burn each other up.

It is proved by numerous experiments that a plate of iron one inch in thickness is a perfect protection against these shells, but as a few discharges of solid shot will break such a plate to pieces with great damage to the ship and crew, it is of no value in actual warfare, and the only means of enabling a ship to sustain a combined fire of shells and solid shot is to cover her with plates of wrought iron 4½ inches thick, which are proof against both.

The experiments in England have shown that if wooden vessels, covered with thick iron plates, are exposed to a rapid fire of solid shot at short range, the framing of the ship is terribly shattered, even when the plates are not broken through. The only suitable vessels to receive the coating of plates are those which are built of iron. The engineers of France, as well as those of England, agree in this conclusion, and the French fleet would have been built of iron had there been time to accomplish this; but as the Emperor wanted the vessels finished by this Spring, it was necessary to use the materials on hand and to employ the mechanics who were trained only to working in wood. But the three great naval powers of the world are now busily constructing vessels of iron to be driven by screw propellers and to be covered with wrought iron plates 4½ inches thick.

The sailors in the United States navy are paid $18 per month, much more highly than those of any other nation, and they are consequently at least equal, if not superior, to any in the world. Still, to send these men in unprotected wooden vessels against the iron-cased ships of the European navies, would be simply to send them to a hopeless contest and certain destruction.

Instead of expending some millions of dollars on the old sailing vessels of our navy, would it not be better to put these all up at auction and let them be sold for freighting purposes, and then build our new propellers of iron and cover them with shot-proof iron plates?

ANOTHER GREAT MECHANIC GONE.

Recent news from Europe inform us of the decease of Sir Peter Fairbairn, at Leeds, England, on the 4th of last month. This eminent mechanic who was raised to the order of knighthood by Queen Victoria, was the son of poor but respectable Scottish parents, who apprenticed him at the age of fifteen years to the trade of a millwright, at Newcastle-on-Tyne. When his term had expired, he, at twenty-one, went to Manchester, and worked as a journeyman for several months with his elder and more famous brother, Mr. William Fairbairn, who still survives him. He subsequently went to London, where he worked several months. He next crossed over to France, where he was engaged in several establishments for about a year. All this variety of experience was sought for the purpose of improving his mind, increasing his skill, extending his knowledge, and making him a more perfect millwright and engineer. When he returned to England in 1823, he again entered his brother's establishment in Manchester, and worked for about a year, when his superior ability and character having become more widely known, he was offered a partnership with the firm of Messrs. Houldsworth, of Glasgow, Scotland, who were engaged as manufacturers of machinery. This proposition he accepted, and in this connection he continued for about five years, and then removed to Leeds, where he commenced business for himself independently. From a moderately small beginning he gradually arose to be one of the most famous, wealthy and extensive manufacturers of machines in the world, and at the time of his death about 1,400 hands were employed in his establishment.

Sir Peter Fairbairn was an ingenious inventor as well as a skillful practical machinist, and took out several patents for improvements in spinning machinery. His establishment was distinguished for turning out flax machinery of the first class, some of which we have examined, and we can say that it afforded good proof that his reputation was deservedly acquired. Of recent years he engaged extensively in making engineering tools of almost every description, and a large number of the machines that are employed in the British government arsenals for rifling and fitting the several parts of small arms and Armstrong guns were made at his works.

At the time of his death Sir Peter Fairbairn was 62 years of age, forty-seven of which had been spent in the most active manner, and sometimes under very discouraging circumstances. His life affords a most useful lesson to all young mechanics. With but an ordinary school education he arose from the position of an humble mechanic, under the sway of a monarchical government, to be one of the titled but never one of the exclusive British classes. It is related of him that during his spare hours, both when he was an apprentice and a journeymen, he availed himself of every opportunity to store his mind with useful information in all that related to his own profession particularly, and also with general knowledge to fit him for mingling with the most cultivated and refined society. He had the reputation of being a generous employer, and of having a straightforward business way with him which imparted confidence to all those with whom he had business transactions. He was buried on the 9th of January, and in Leeds his funeral was made a public event. A vast multitude of all classes followed his remains to the grave, and many persons from all parts of England assembled as mourners. The hearse was preceded by 700 mechanics—Sir Peter's workmen—and the procession was more than a mile in length. It is pleasing to reflect that this great mechanic was also a good man, and highly esteemed by all who had the pleasure of his acquaintance.

WHAT INVENTORS HAVE DONE.

While we were sitting, a few days since, in the counting room of one of our importers, a tall, intellectual, nervous and rather poor-looking gentleman came in, spoke familiarly to the merchant, and began to expatiate on what was evidently his hobby—the mistake of all the world in regard to the crank motion and the expansion of steam. We soon saw that his ideas were vague, and that he was one of those unfortunate individuals who, from presumptous self-delusion, waste their lives in endeavoring to overthrow the laws of nature, and who form so strong a contrast with the long line of successful inventors represented by Archimedes, Gallileo, Watt, Arkwright, Whitney, Morse, Goodyear, Howe, McCormick, &c., who, by patient study, learn the real truths of Nature's laws, and thus derive the power to compel her great forces to the service of man. When this visionary went out, the merchant remarked to us, "He is a cousin of mine," and added, with a sneer, "He is an *inventor*."

From the merchant's office, we went to one of the European steamers, and, as we came in view of her noble and graceful proportions, our mind flashed back to the time when the first canoe was invented, and glancing swiftly over the great improvements in navigation through triremes and argosies to the *Adriatic* and the *Great Eastern*, the question arose: How many merchants would have been in possession of their great ships and luxurious dwellings had there never been any inventors? The first boat that was dug out of a hollow log was unquestionably a great invention in its day; and from that beginning, through a long chain of inventions, the art of navigation has grown up to its present condition. It is to a succession of inventors that the world is indebted for commerce, with all the wealth and all the blessings which it bestows.

And not for commerce alone. The man who first sharpened a stick to use in planting his corn commenced the long series of inventions of agricultural implements which have led to the production of Peeler's plow and McCormick's reaper. Had none of these implements been invented, the earth would still be tilled by the unaided fingers alone, and what would have been its population and riches?

All the thousand manufactures which contribute so much to the comfort, convenience and elevation of the human race owe their existence directly and entirely to inventors. And without any of the varied forms of wealth that are produced by the arts of agriculture, manufactures and commerce, neither literature, nor sculpture, nor painting, nor any of the other results of civilization, would have been possible; mankind would still have been in the lowest depths of savage degradation.

The progress of inventions is now moving forward more rapidly than ever before, and the SCIENTIFIC