

## THE KRUPP ORDNANCE.

The *Standard*, which has been publishing a series of articles from a well known hand in praise of our ordnance and things and persons connected with the manufacture thereof, had been rather "put out" by the report of Captain Simson, (Captain Edward Simpson, U. S. Navy,) to the United States Government, on the artillery of European Powers, and set itself to work to denigrate the Krupp gun in a recent number. It will be matter of sincere congratulation to us if the conclusions of our contemporary turn out to be correct, and we have not a word to say against what the *Standard* asserts respecting the claims of Colonel Campbell and Mr. Fraser of Woolwich to gratitude and thanks for what they have done. We believe them to have improved very much on the Armstrong gun in simplifying without weakening the construction, and to have done immense service in the great economies they have introduced in the cost of the iron and the processes of manufacture. But that is a matter quite apart from the merits of Krupp ordnance. It may strike our contemporary as a very curious fact, if he can only clear his mind of prejudices, and consider the matter without one eye on Woolwich and the other somewhere else, that a very thrifty country like Prussia, and a very impoverished country like Austria, should deliberately select steel, and that Russia, having at her command confessedly the best iron in the world, should find it the best material for ordnance, if the Krupp guns be at once so costly and so dangerous. It is not for want of steam hammers that they refuse to accept the Woolwich system of ordnance. Ever since Nasmyth's invention revolutionized the whole construction and material of artillery—for to the steam-hammer we owe built up guns, gaint coils, plated ships, and all their concomitants—foreign workshops have been provided with them, and the largest hammer of that sort now in existence, if we be not mistaken, is at Krupp's factory at Essen. Captain Simson (Simpson) seems inclined to give the palm of excellence to Krupp and Russian steel, but he admits that "the more scientific construction of their guns" may have something to do with the contentment expressed by artillerymen with the character of the material. The *Standard* quotes from Lieutenant Haig's paper a list of explosions of Krupp guns which we admit to be very serious, but those who use them are not deterred from their preference by the accidents and in the very same number of the paper which contained the criticism there is an account of the *Temeraire* and *Superb*, in which we may find some explanation of the comparative immunity of Woolwich guns from destructive explosion. They are much heavier than the Whitworth guns, which are built of steel, and very like Krupp and Russian guns in many respects. The 38-ton Whitworth fires a 1,200 lb. projectile with 120 lb. of powder. The 35 ton Woolwich gun fires a projectile of only 750 lb. with a charge of a 110 lb. of powder. As to the question of expense, it must be remembered that the Krupp gun is paid for like a watch or any other piece of mechanism, and that the price must represent a profit to the manufacturer; whereas our Woolwich gun is only charged with the cost of material and labor, and no part of the charges connected with the establishment in which it is made is taken into account. Our contemporary proceeds to remark:

"As for the advantage of breech loading, those who have read the recent article in

these columns on "The Growth of the Guns" will apprehend that the inducements to adopt breech loading for naval ordnance are utterly passing away. Much has lately been said about the achievements of the Krupp field gun at Steinfeld, and a perfect panic seems to have seized the Austrians on the subject. Perhaps there is a little statecraft in this. The Austrian Government are probably aware that the bronze guns are out of date, and are anxious to rush into steel. A good panic will reconcile the taxpayers to the cost, and the idea that the new field guns will be an improvement on the Prussian will help to make the change all the more popular. The wonderful number of hits made with the Krupp gun is much dwelt upon. But a few details on this point would be useful. Did the steel gun use the same projectile as the bronze? Some time ago the Prussians sent one of their field guns to this country, it was fired against one belonging to the British service. At 1,500 yards the British gun proved its superiority in hits, in the proportion of 433 to 150. But this difference in our favor was attributable, in some degree, to our sharpnel shell, whereas the Prussians made use of the common shell. At all events, there is nothing in the trials at Steinfeld to cause any alarm in England. The Austrians, indeed, claim to have improved on the Prussian field gun, so that now they have at their command—if they will bear the expense of the change—a field piece of extraordinary excellence. In fact we are told that the 87 centimetre steel cannon, made according to Austrian ideas, is superior to any field piece now in use. Whether this opinion would survive a contest between the Austrian model piece and a field gun of the Woolwich pattern we greatly doubt."

It is astounding to read the opening sentence of the above paragraph, at this moment when our own mechanics are racking their brains to find the means of loading guns inside the turrets, and to prevent the mischief which half neutralises the value of turrets and armor in the compulsory opening of the ports. Why, the inducements, so far from passing away, are becoming more pressing and forcible! Here we have pneumatic apparatuses, and cranks, and levers suggested, and all sorts of experiments going on because muzzle-loading presents obvious impediments to complete safety. As to "the statecraft" of frightening a nation out of its wits about its artillery, in order to inveigle them into a change, we can only say it is not of the kind at all usual in Austria. It may be that there is nothing in the Steinfeld experiments to cause alarm in England, but if our contemporary will only take the pains to make himself acquainted with the facts as to the new German shell—and the military attachés have furnished useful details on the point—he will find that conjointly with the failure of the new sharpnel there is cause for a little less "insular arrogance" and confidence on this side of the Channel respecting the pre-eminence of our field ordnance.

## VESSELS OF WAR.

Never before was the whole subject of marine warfare in such a muddle as it is now. When Louis Napoleon launched the *Gloire*, fifteen years ago, he opened a discussion which seems never likely to come to an end. The European navies had settled down to what they supposed was a sort of "hard pan." After more than a decade of talk and experiment they had finally got the screws fairly introduced, and the batteries

were generally equipped with shell guns. The destruction of the Turkish fleet at Sinope by the Russian shell guns and time fuses, in the early part of the Crimean war, sent a shudder through the naval circles of Europe. The alarm was as to the then existing power of naval batteries. If the small shell-guns of the Russian fleet did such swift execution, what would be likely to happen if ten inch shells were fired into one another's vessels? One or both of the antagonists must forthwith be sent to destruction. The standard authority on naval gunnery referred with horror to the awful power of this tremendous missile. It was the fearful anticipation, as much as the launching of the *Glorie* that gave birth to the iron-clad era. That those anticipations were entirely justifiable the fearful carnage which the shells of the *Merrimac* in a few minutes inflicted on the *Cumberland* and *Congress* is abundant proof.

It was at this time, in 1861, that the *Monitor* made its appearance. England had already begun her iron-clad navy, and had launched the *Warrior*, the *Black Prince*, the *Defence*, and another. The French had built a companion to the *Gloire*. The fight between the *Monitor* and *Merrimac* changed the whole aspect of things. Foreign powers saw that wooden ships had no show against shell guns in shot-proof vessels, and that we had been able to build within a hundred days a ship that solved the iron-clad problem, and was capable of sinking any French or English wooden ship that might come against it. The fact, too, was apparent that a few months would give us a fleet of just such vessels. And in a few months we had the fleet. But we have made no attempt since the war to compete in iron-clad construction with England and France or any of the European powers. We have practically ceased to place reliance on guns for the defence of our harbours. Our course now is plain. It is to attack an enemy below the water line—abandoning all devious attempts to overcome his armored sides—and thus to neutralize whatever advantage he may have obtained by colossal expenditures on iron-clads.

The fact that attack below the water line by subaqueous weapons is destined to utterly revolutionize naval warfare would seem to be too plain to require labored demonstration; but undoubtedly another great war will be needed to convince naval authorities of it. England, France, Germany, and Russia vie with each other to produce an iron-clad absolutely impregnable to existing artillery. England has just put the *monitor Inflexible* on the stocks. She is to have twenty-four inches armor on her turrets, and is to carry guns firing shot weighing 1,600 pounds. Russia has launched the *Peter the Great*, and Germany follows with her *Fredrick the Great*. Meanwhile, the naval writers of Europe are filling newspapers, magazines, and pamphlets with discussions and controversies as to the general character and powers of iron-clads, and, strangely enough, naval officers are preparing elaborate treatises on naval tactics for the disposition of these monsters, as if they were to be handled and manœuvred as Von Moltke could an army corps on a smooth plain. Inasmuch as a few hundred pounds of nitro-glycerine, or some other of the modern explosives, fired in contact with their unarmored sides below the water, would send the strongest of these naval giants to Davy Jones' locker before even the simplest of "naval tactics" could be put into operation, we must regard the work of these industrious tacticians as thrown away.