

ammunition is not, I regret to say, interchangeable, as the bottle-necked form of the Martini-Henry cartridge is unsuited to the mechanical method of loading the Gatling, from its not passing smoothly down the drum into the chamber. Possibly this defect, not in the gun or its cartridge, but in the uniformity of the armament of the Gatlings and of the infantry, may be remedied; but even if the former require a separate ammunition, I do not conceive that in convenience in storage or in issue will be found to arise.

In conclusion I have only one observation to offer. History shows, with no doubtful indications, that it is not merely to the improvement of arms that nations have owed their success in war. To take the most recent instance. The French infantry were incomparably better armed than their opponents. They were taught to rely on their chassepôts and on their mitrailleurs, but they were not sufficiently instructed in the method of employing them. They were wanting in the steadiness and discipline which rapidly firing arms require, and as their confidence in the new weapons had been unduly exalted, so when results failed to fulfil their anticipations their morale became impaired. By all means furnish soldiers with the best arms that can be procured, but at the same time teach them that battles are not won by arms alone, but by a combination of courage, discipline, and skill which pertains to vigorous nations and to well-trained troops.

THE UNITED STATES NAVY.

(From the London Engineer.)

We have before us the detailed reports for 1871 of the United States Navy Department, and although these documents do not contain and elaborate criticisms on the naval policy of foreign Powers, nor any revolutionary theories of marine engineering or naval construction, as has generally been the case in former years, still they present many points likely to be of interest to our readers. One of the most important facts that we learn from them is that the United States have definitively decided to abandon any pretensions that they might previously have entertained of ranking as a first-class naval power. This policy, although only indistinctly indicated in the report of the Secretary of the Navy, is expounded clearly enough in the document furnished by the Chiefs of the Bureaux of Steam Engineering and Naval Construction. The latter of these gentlemen assumes that it is not likely the United States will ever in future engage a foreign foe in line of battle, and that consequently it will not be to the interest of the Government to follow too closely the policy of other nations in building a large and costly iron-clad fleet. Neither does he consider it advisable to copy the form of unarmored vessels already built in Europe until their superior qualities are duly proved. He points out that the geographical position of the United States is such that a large and powerful iron clad navy is not required as a bulwark of defence, that the abundance of their internal resources enables them in time of war to live within their own means and without foreign products, and that consequently they would not be much affected by their commercial intercourse with either countries being cut off; adding that while England is spending enormous sums of money in constructing costly iron clad vessels for the purpose of maintaining the supremacy of the seas, the United States have not so much as collected the materials for building one, and that, until circum-

stances compel, they can allow other nations to experiment extensively in that class of vessels, and by a thorough investigation determine whether armor or ordnance has the advantage. He moreover maintains that it cannot be supposed the United States have acted unwisely in delaying to build iron clads, however the question may be decided, but that the loss will be to those nations possessing a number of armored vessels of obsolete types, unable to withstand the effects of modern artillery.

It is needless to point out the fallacies contained in these arguments. No great commercial country like the United States can afford to sink into the position of a third rate naval power. Vast as their natural resources undoubtedly are, they nevertheless do not possess the necessary elements for producing a large iron clad fleet at a short notice, and in the event of a war with a maritime nation of any importance their seaboard would be ravaged and every vestige of their commerce swept away before one of the vessels in which they are at present so deficient could be launched. It is, besides, a very difficult thing now-a-days for a civilized country to exist solely upon its own internal resources. When war is raging with all its fury the soil remains untilled, manufactories are closed, trade is at a standstill, and famine close at hand. The Confederate States, by no means the least productive parts of the Union, at all events learned this terrible truth by experience.

The indifference displayed by the United States Government with regard to the construction of iron clad ships of war is, however, in some measure counterbalanced by the unmistakable attention that is being devoted to torpedoes. The fact of the United States holding themselves aloof from the complications of European politics has produced in the country, as the Secretary of the Navy justly observes, a feeling of security which has caused the Navy to be neglected; at the same time he considers that the want of vessels of war to resist an attack which can only come from the sea may in a great measure be met by a well-devised system of torpedoes. It is, as he remarks, beyond a doubt, that there is no iron clad afloat, no matter how powerfully constructed, that can withstand the explosion of a skillfully applied torpedo. Thus, while these terrible engines of destruction are the cheapest of naval weapons, and within the means of the poorest nations, the strongest and best prepared are unable to resist their attacks. Torpedo warfare is still in its infancy, but it is the infancy of a most powerful development, and it is especially the policy of the United States to foster its growth. The Secretary admits, however, that it would be a grave error, while advocating the importance of torpedoes as one means of attack and defence, to forget that they alone will not suffice for naval purposes; and agreeing as we do with the last observation, we cannot refrain from expressing our surprise that he should content himself with simply recommending to his Government the construction of a few small unarmored cruisers, useful enough no doubt in times of peace, but of no good whatever during war, unless supported by an iron clad fleet.

We now proceed to points which, although of less national importance, are, perhaps, of greater interest to our readers than those we have already touched upon. As all practical men in this country had long foreseen would be the case, the Americans have at length discovered the unsuitability of wool as a material for the construction

of an iron clad fleet. The Secretary of the Navy states that early in the past year his attention was called to the fact that many of the iron clads needed extensive repairs to render them fit for efficient service. Several of them, and those the most powerful, were built of wood, while the beams and many of the frames of those with iron hulls were of the same material, and this woodwork was found upon inspection to have decayed so much that it was absolutely necessary to replace it immediately with iron.

The same official (Chief Engineer King) expresses an opinion strongly in favor of the employment of compound engines, principally on the ground of their having been adapted by various steamship companies; but he certainly brings forward no arguments of his own in their favor, and, indeed, informs us that so much doubt, exists as to their value that a board of engineers has been appointed to inquire into the subject.

Another point of interest to which he refers is the substitution of two bladed for four bladed screws in the vessel of the American Navy, with a view of increasing their efficiency under sail. The result of this change appears to be that while the speed is not materially altered in smooth water and light winds, it is very seriously reduced when head seas and winds are encountered, and that the screws cannot keep steady way on the ships against moderate gales when accompanied by heavy seas. The question of the best form of screw propeller seems to have caused considerable difficulty to the department, for we find that during the past year several experiments have taken place for the purpose of testing the point. Of only one of these are we given any details, and that is with a Hirsch screw, which by the way, appears to have afforded anything but good results.

The boilers of American ships of war have suffered equally with our own by the introduction of the surface condensers, and Mr. King estimates that their duration has been decreased nearly one-half. He states that a thin coating of saline scale is found to be the best preservative. All the new vessels, it appears, are being supplied with cylindrical boilers with their shells of increased thickness.

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