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THE REAL STRENGTH OF OUR NAVY.

On page 198, of our current volume, we gave an accurate list of the vessels belonging to the United States navy. From that mass of statistics, we now sift out the elements which show the actual extent of our naval power.

We must first strike from the list every ship which is not furnished with steam. No argument is required to make good this assertion; for it is now the practice of every naval power to build steamers only, and to convert all sailing ships (that are capable of it, of course), into steamers. Our sailing vessels, *without* steam, could not overtake steamships of *less* force, nor escape from those of *greater* force. This operates as a tremendous reduction, for it deprives us at once of 1,800 guns out of 2,300. But there is no help for it, and the fact is as stubborn as it is disagreeable. The conversion of the best of these vessels naturally suggests itself, but even this process requires time, which is precisely what our necessities do not admit of; indeed, if the work were begun to-morrow, it is doubtful whether a single one of these ships could be got to sea in eighteen months. The larger experience of other nations offers us no encouragement to enter upon this mode of renovation; for it has been found that after much outlay, generally equal to two-thirds that of a new ship, the results have been the saddling of the navies with very slow coaches and consequently inefficient ships.

The navy, then, upon which the Union must rely to represent it to foreign nations, if it were required to do so immediately, consists of seven screw frigates, five screw sloops, four side-wheel sloops, and eight gun sloops, making a total of twenty-four vessels, carrying 386 guns. This is absolutely the entire national fleet of the United States, and no other statement of the case can make it greater. With few exceptions, they are, however, fine ships. The frigates are superb, sail very fast, and can carry heavy batteries; such as the *Minnesota*, 32 of 9-inch Dahlgren guns on the gun deck, 14 of 9-inch and 2 of 11-inch on the spar deck. They have now only 40 guns mounted. Their defect is want of steam speed, which may be 8 to 9½ knots. If it were 12 to 13, these ships would be unrivaled. The *Niagara* (by Steers) is a fine model, and can reel off from 14 to 15 knots under canvas—could steam 12 knots easily if she had a proper propeller. The present one can only expend two-thirds her engine power. Her spar-deck battery of twelve 11-inch cannon, should have the addition of a gun deck, with 30 of nine-inch. The *Lancaster*, which is in reality a frigate, steams better than the *Merrimac* class, but does not sail well. Her battery is suitable to her tonnage, which is about three-fourths that of the larger screw frigates.

The screw sloops are well built, and one of them, the *Brooklyn*, a contract-built ship, is very superior, sails and steams fast, and carries a powerful battery. The *Pensacola* is probably quite equal to her. But the *Richmond* is very slow and uneasy at sea, the *Hartford* is not remarkable, and the *Jacinto* is a serviceable, strong ship.

The side wheelers (*Powhatan*, &c.) are well tried and reliable steamers, but not of the greatest speed.

Of the gun sloops, the *Iroquois* is certainly an admirable sample, steaming 12½ to 13 knots, uses her moderate canvas to the best advantage, and is a good sea boat. The *Dacotah* may be her equal; the *Mohican* and *Wgoming* not quite so fast. The *Narragansett* and *Seminole* are very inferior to the *Pocahontas*, a re-build, which is a sufficient indication of her efficiency. The *Pawnee* carries a very heavy battery for a draft of ten feet.

All of the screw frigates, sloops and gun sloops, and the *Powhatan*, are armed with 9-inch, 10-inch, and 11-inch cannon of Captain Dahlgren's model, except the *Jacinto*.

This, then, is the total effective force of the United States by sea, and if concentrated under one command on our own coasts, would ensure them from foreign insult during present troubles, and repress Spanish designs in the West Indies or Mexico. No measure would be so impressive, and it should be carried out immediately.

Again, is there power to increase this force in a reasonable period? One frigate alone (*Franklin*) is in process of construction, and seven sloops-of-war are *authorized;* but it is not probable that any one of these ships could be got to sea in twelve months, with every possible exertion.

To command this fine fleet of 24 steamers, would, no doubt, be the highest ambition of the best of our naval officers; and yet, new ideas are now in course of execution, which, if successful, will produce vessels far in advance of these. The attention of the profession is now fixed upon iron-plated ships with rifled cannon,—themselves impenetrable to the heaviest calibers at short distances, and yet able to destroy the largest ships at distant ranges.

This is the proposition, and the trials of the *La Gloire* seem to prove the principal fact in regard to a combination of invulnerability, speed and buoyancy, in the same hull. The *Warrior* is close on the heels of the *La Gloire*, and is expected to be free from some of the defects inseparable from the first execution of a plan, embracing so much of novelty and of detail.

Is there an intelligent citizen in the country who is not anxious to know what steps we are to take in this matter? By executive document No. 25, House of Representatives, XXXVIth Congress, 2d Session, now before us, we learn that the question of metallic protection against shells was submitted, in a practical form, to our naval authories, so far back as 1852, by Capt. Dahlgren; but to this date no measure seems to have been taken towards a solution, or even inquiry. The British are astonished at this, and the *Times* infers from it some sagacious and substantial doubts on our part of the value of iron-clad ships, based peradventure on ascertained facts.

By another document we see that rifled cannon will not be wanting when required, but surely no time is to be lost in commencing a *ship-in-proof*. Such a vessel would have steamed into Charleston harbor any day, and kept up a permanent communication with Fort Sumter, regardless of the fire of the batteries, if they had rained shot and shell on her, and that without carrying a single gun, or needing a shot from Sumter to cover her.

ATMOSPHERIC ELECTRICITY.

A lecture was recently delivered before the Royal Institution of Great Britain, by Professor William Thomson, of Glasgow, on the above subject, in which we find some very interesting information. He stated that during serene weather the earth's surface is generally found negatively electrified, and from this fact it might be supposed that the globe is electrified as a whole with a negative charge, and that it is left insulated as it fleets through space. But although the earth is insulated with the atmosphere, which is considered a non-conducting envelope, it cannot be so insulated as to hold a charge in interplanatery space. It has also been supposed by some persons that outside of the earth's atmosphere there is a void space constituting a perfect insulation, because there is no substance to conduct off the electricity. This is an erroneous conjecture, based upon the idea that electric conductivity is a power of matter rather than a mere quality of non-resistance. By experiments with the air-pump and "vacuum tubes" for exhibiting the electric light, according as we obtain a vacuous space, it appears to be a conductor rather than an insulator.

Professor Thomson is a believer in the Franklin hypothesis of a single electric fluid. He said:—"We now look on space as full. We know that light is propagated like sound through pressure and motion. We know that there is no substance of caloric; inscrutable minute motions cause the expansion which is marked by the thermometer; these stimulate our sensations of heat. Fire is not laid up in coal any more than in a Leyden jar, but there is potential fire in each. We can conceive that electricity is an essence of matter, but whatever it is, one thing is quite certain, electricity in motion *is heat.*"

THE EFFECT OF WAR UPON A NATION'S WEALTH.

The firing of a 9-inch shell gun, like those used on most of our naval steamers, costs $9.34 at each discharge. Now, the burning of $9 worth of coal in one of our cotton, or carpet, or steam-engine manufactories, generally results in the production of from $10 to $20 worth of value in some other kind of property; but the burning of powder in warfare does not produce any other property; its only products are noise, and smoke, and death, which are not saleable in any market. Of all modes of consuming wealth unproductively, the most rapid are conflagrations and war.

It is frequently the case that the productive power of a people is so great that the aggregate of individual savings more than counterbalances the public waste of wealth in war, and thus the national wealth may increase even during the continuance of expensive wars. Macaulay says that this has been the case with England in all of her wars; and was most conspicuous in the most expensive one that she ever engaged in, the long contest against the opinions of the French Revolution which continued, with two brief intervals, from 1793 to 1815. In this gigantic struggle, England not only supported her own armies, but she also contributed vast sums to her allies—the other governments of Europe—to enable them to keep up the fight. It is true that a large portion of this money was raised by borrowing, the national debt having been increased during the period about two thousand millions of dollars. But a government cannot borrow unless somebody has it to lend, and this whole immense sum was saved by the English people right in the midst of the war, and loaned to the government.

If we put aside the vail which the interposition of *money* throws over the transaction, we shall find that what really took place was this. It does not require the whole of the labor in any community to produce the food and clothing needed; and when a sufficient number of laborers are employed in the production of these first necessaries, the remaining labor of the community is directed to making such articles as are most desired. In times of peace this surplus labor is principally devoted to making machinery, constructing steam engines, building railroads, and, in short, in increasing the various kinds of active capital which facilitate industrial operations and thus augment the annual production of wealth. But in war, this labor is diverted to the production of food, clothing, powder, muskets, cannon, &c., to be worn out and destroyed by the armies; and thus the accumulation of wealth is stopped, or at least, checked.

In some cases, indeed, so large a portion of the community is taken from productive labor and put to the work of destroying property in fighting, that the national wealth is rapidly diminished. When Frederick the Great, of Prussia, was contending with Austria for the possession of Silesia, he said that he would fight as long as there was a potato in the kingdom, and Macaulay says that he did fight till the great mass of the people had nothing to eat but potatoes, and every private fortune in the country was destroyed. Louis XIV., too, kept France at war with combined Europe till the very nobles were reduced to a diet of black bread, and numbers of the people died of starvation.

NO SECESSION IN PATENTS.—The number of patents issued during the week ending April 9, amounts to 98. Of this number, 35 were procured through the Scientific American Patent Agency.

THE glass steam engine, on exhibition by the Bohemian troupe of glass blowers at the Cooper Institute, is well worth seeing. It is a complete transparent, low pressure, working engine, with all the inner parts, valves, &c., of course, visible.

A NEW asteroid was discovered by Mr. H. P. Tuttle, of Harvard College, on the night of the 10th of April. This is now the 66th small planet that is known to exist between the orbits of Mars and Jupiter.