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### RAISING MONEY FOR THE WAR.

If a farmer who is not able to buy a horse, and is consequently cultivating his land with a spade, can succeed in hiring a horse and plow from one of his neighbors, he can by their means raise a much larger crop, and can therefore well afford to pay the owner for their use. Or if he hires money to buy a horse and plow with, he can, from the larger product of his farm, afford to pay interest for the use of the money.

In the same way, a manufacturer who hires money and invests it in machinery is, by the larger amount of commodities which he can manufacture, enabled to pay the interest on the money, and still have an additional profit left to himself.

The men who live on the interest of their capital employed in industrial operations are no burdens upon the community. The use of their capital increases the product of wealth in the country to an amount greater than the income which they derive from it. They contribute more than any other class to the increase of the national wealth.

But when a government hires capital and consumes it in war, this capital ceases to aid in the production of wealth, and the interest that is paid for its use is drawn from the pockets of the industrial classes, diminishing by just that amount the sum which they can use for their own comfort and pleasure. A national debt is a simple burden, whether owed to citizens or foreigners. Almost every nation in Europe is supporting in idleness a great army of fundholders, by taxes wrung from the producing classes.

Such is the effect of a national debt after it is formed; the process of its formation is not less injurious. The means of carrying on this war must be supplied by the community, and it is easier to furnish it in taxes than by the way of loans. The great mass of our business men and a very large portion of our farmers are in debt. If the capitalists to whom these debts are due, change their investments to government stocks, they must collect the debts. If a farmer, manufacturer or merchant has his active capital taken away from him, it embarrasses his operations very seriously. It is better for him to pay a large portion of his profits in taxes than to find it impossible to renew his loans. The former simply diminishes his income, the latter frequently causes his bankruptcy.

Nearly all intelligent English writers now regard it as a matter of regret that the funds for their great wars were not raised by taxation instead of by loans. The *Westminster Review* says that it would have been done had the statesmen of the times understood the subject of political economy.

### THE NEW GUNBOATS.

Specifications have been published, and numerous estimates given in, for building a large number of new steam gunboats. We regret that the contracts have been delayed for so many weeks after the estimates have been tendered by most of our shipbuilders. Much valuable time has thus been lost. We believe the business could have been completed in as many days as it has taken the naval authorities weeks to consider.

It is intended that the engines of these vessels shall be very simple, compact and well-made. They are not to be fitted for the expansive working of steam, although they are to have the Stevens cut-off.

We understand that several engineers and engine builders in this city intend to institute another series of experiments to test the relative economy in working steam full stroke and expansively, as they do not believe the "Erie experiments" were conclusive on the subject. This movement has been influenced by the designs presented for the engines of the new gunboats.

These vessels are intended to draw but little water, so as to run into shoal bays and rivers. The length of each will be 158 feet; extreme breadth, 28 feet; depth of hold, 12 feet. The framing is to be of the best white oak. The rig will be that of a three-masted schooner, and each will carry six 32-pounders and one pivot gun on each side, beside a light rifle gun on the fore-castle deck as a chaser.

Each boat will have two horizontal engines, of 30 inches bore and 18 inches stroke. Sewall's surface condensers will be used, and each engine will be arranged so as to operate independently, when so required. The boilers are to be two in number—Martin's patent—having vertical water tubes connecting the upper and lower water spaces. Each will have 88 square feet of grate surface, and 2,700 square feet of tubular and flat heating surface. The pressure of steam designed to be carried is 30 lbs. on the square inch. A donkey engine will be used for pumping and driving a Dimpfel blower for the furnaces. A four-bladed screw will be employed as the propeller.

It is contemplated that, when fully manned and all ready for active service, each gunboat will only draw about 10 feet of water, and will run at a speed of from 12 to 15 knots per hour. If these vessels realize such a speed, they will prove to be most effective cruisers. No privateer or smuggler craft whatever will be able to escape them. It is desirable that they should be finished in about four months, at the farthest; but we much doubt if this is possible. We trust that the contracts will be given to parties who will put in the best of material, and employ the best skill to make these vessels unrivaled. Too many of our government contracts for machinery have usually been given to parties through favor; hence, the engines and boilers of several steam frigates have not been of a superior character; they have been subject to frequent breakage.

The shaft of the propeller screw, we understand by the specification, is to be only 7 inches. This appears to be very small, as it has been considered by engineers that a 9-inch shaft is barely sufficient for engines of 30-inch cylinders. When the shaft of a propeller breaks, the vessel becomes almost helpless. Two blades of a screw may be broken, and the boat may still make tolerable speed; but when the shaft breaks, all the means of propulsion are upset. It is wise, therefore, to make a screwshaft rather large than small. We are very partial to those engineering "errors" which are on the "safe side."

The machinery of the new gunboats should be as good as skill and material can make it, so as to be entirely reliable in the most critical moments. The Chief Engineer of the Navy has examined the English gunboats; he knows their good and bad points, and we understand that his designs, if carried out, will make the engines of the new gunboats superior to those in the British navy.

### IRON-CLAD FRIGATES AGAIN.

We would again call the attention of those in authority at Washington—and those members who are about deliberating on the affairs of the nation in the extra session of Congress—to the necessity of making provision for building several new iron-clad frigates and gun boats, or plating some of our best steam frigates that are now in service. As it regards the covering of several of our present frigates with coats of mail, contracts might be made for this purpose, and the plates may be preparing while the vessels are actively employed up to the very day when they are required to be docked to have the plates put on. By pursuing such a course as this, much time would be saved. Perhaps the best method of obtaining a mail-clad fleet is simply to cover common wooden-built war vessels with thick iron plates. *La Gloire*, the celebrated French frigate, is built in this manner, and as she has been fairly tested; it is not a mere subject of experiment, but a practical fact.

The new gun boats for the American navy, for which proposals have been given out, should be iron-

plated in their most vulnerable parts, so as to be shell-proof. If they are not to be protected in this manner, they will not realize the benefits anticipated from them. They are intended to run into shoal waters—bays and creeks—where they will be exposed to batteries on shore at short range, and from which shells may be effectually used against them. They will therefore require to be shell-proof, or they will not be reliable, according to modern shell practice.

In England, there is a great variety of opinion respecting the best modes of building mailed ships—whether they should be constructed entirely of iron, or of iron and wood combined, or whether wood should be the main frame-work, or merely a lining for the iron plates to be fastened upon. There are seven new iron-plated frigates building at nearly as many English and Scotch dockyards; these have timber linings for the iron—the metal being the main material of the vessels. The *Warrior*, which was the first for which a contract was made with Penn & Sons, of London, seems to have been a costly experiment thus far. It is not yet half finished, while the *Black Prince*, its consort, building by R. Napier, of Glasgow, will be ready for sea in the course of three or four weeks. The plans of the *Warrior* have been altered several times, and now the government naval authorities are not sure but they have made a grand mistake in building such vessels, as they have come to the conclusion not to enter upon the construction of any more at present, but to lengthen several of their line-of-battle wooden ships and cover them with iron plating. Louis Napoleon has been most active in building such vessels. Admiral Elliott, of the British Navy, states that he lately saw 12 iron-cased frigates larger than *La Gloire* in the French dockyards; also two line-of-battle ships pierced for 100 guns each. The French force in armor-clad vessels, is now 24 frigates of the first class.

These facts deserve attention, inasmuch as they show us how much we are behind other naval powers. We have not a single iron-plated gun boat or other vessel in our navy, and no measures have yet been taken for the construction of one, although their utility has been endorsed by our most able naval officers. Such vessels are costly, it is true, but we shall find it a more costly affair to prolong a struggle with insufficient agencies, than to adopt the most effective measures—although the most expensive at first—to make a complete and speedy settlement of our troubles. Iron-clad vessels can run past forts without much danger, and they can also attack forts and land batteries almost with impunity. For the sake of our commerce, and our treaties with other nations, we are bound to re-establish the authority of our government, and open our ports that are now blockaded within a reasonable period. If we had three iron-cased frigates of light draft (18 feet) now, they could open the trade of the Mississippi, collect dues at New Orleans, compel submission to the laws, and make peace with power to preserve it.

RAILROAD IMPROVEMENTS.—The Directors of the N. Y. Central Railroad have commenced the construction of a new bridge over the Tonawanda Creek, at Batavia. The *Batavia Times* states that the new structure will be a wrought-iron, trussed girder bridge of one hundred and twenty-four feet span, embracing the double track between two girders. The trusses consist of frames stiffened and strengthened by lattice work, and when viewed in sections as they now lie in a detached and bulky form, impress us favorably as to their capacity of sustaining an immense strain. The total weight of iron used in its manufacture is 205 tons, and the bridge is capable of sustaining a weight of about twelve hundred and fifty tons, a strain five times greater than can be brought to bear upon it by any passing train.

COTTON IN INDIA.—Accounts from India state that England is building railroads into the interior, so that the cotton crop, very soon, can be moved as fast as it is produced to the sea shore; and the ship canal across the Isthmus of Suez, from the red sea to the Mediterranean, shortening the distance 6,000 miles, will be finished in twelve months. It is said that if the American troubles continue five years, India will export 4,000,000 bales, rather a large figure, but there is no doubt that great efforts will be made in that country to supply the English manufacturers independent of the United States.