As I have already described the engines elsewhere, I shall only revert to them here for the purpose of confirming the axiom of steam navigation, that the most powerful engine is also that which while giving the highest speed yet practically costs the least. The *Napoleon* had proved this in the Crimean war, where she alone did more service than many vessels together; and the present experiments have made this truth still clearer if possible. The *Napoleon*, with tonnage 5200 and engine of 900 horse power, that is, one horse power to 5·8 tons, was beaten in the trials of speed by the *Magenta* and *Solferino*, whose engines of 1000 horses give 7 tons to the single power. In all the trials, with 2, 4, 6, or 8 furnaces, these two vessels invariably headed the list, and in comparing the others with them, not at their highest (for the others could not have kept up then) but at a moderate speed, the consumption of coal was remarkably in their favor; thus there was more effect produced and less expenditure. Relatively to the *Tourville*, of 650 horse power and 4550 tons, the difference is surprising. It turned out that, during the whole cruise, the *Tourville* was obliged to have a greater number of furnaces in blast than the rest of the squadron, so much so that when the rest, at the completion of the experiment, had still enough coal in store to return to Cherbourg with four furnaces going, the *Tourville* had exhausted her stock, and was obliged to make for Lisbon to take in more. This advantage even in ordinary navigation cannot be too highly estimated, and still more so in a real campaign, for the sphere of action of a steamer is one of the most important elements of its power. The *Solferino* with two furnaces going, and a rate of 10 knots, consumes 22¼ tons of coal per day; this makes her sphere of action 4500 marine miles or 1500 geographical leagues, and her regulation provision of 700 tons would be enough for thirty days' consumption at this rate. With the same number of furnaces, but increasing the fires so as to attain a rate of 9 knots (which she has actually done), her consumption is increased to 1560 kilogrammes per hour, or 37.440 per day, and the above provision would serve for a consumption of more than 18 days, and a run of 4050 miles, or 1350 leagues. With four furnaces she attained a speed of 11 knots, averaging 47 tons of coal per day, and this would last for 15 days, and a run of 3960 miles, or 1320 leagues. With six furnaces her mean rate was 12.4 knots, and her consumption 94 tons, reducing her time to 7½ days, and her run to 2235 miles or 745 leagues. With all eight furnaces going she reached a mean speed of 13.9 knots with a daily consumption of 158 tons, under which circumstances her regular provision would last five days, and her run be reduced to 1668 miles or 556 leagues. During her trial with eight furnaces, she maintained, by keeping up her fires, for more than an hour a speed exceeding 14 knots, her engine making 57 turns of the screw per minute; and on the other hand, by reducing the action of her engine to the lowest, the point it could not exceed without stopping altogether, she still reached a speed of 8 knots with only 12 turns in the minute.

All this is very encouraging, but there is one point on which I must exercise some reserve. Beyond doubt, the nautical qualities of the ships, their speed, their facility of evolution, the ease with which their engines accomodate themselves to a number of combinations, the amount of resources of all kinds they can accumulate between their own sides, are important, or even the principal, conditions of their military value; nevertheless, there is another question which, on the great day of trial, will rise to the first rank in importance. I mean the power of their