

THE FUTURE OF ARMORED SHIPS.

The report of the committee appointed in England "to examine the designs upon which ships of war have recently been constructed," has just been published. From the portion which has thus far been published in the *London Engineer*, we take the following remarks upon the subject of armor plating for war vessels, which is much the most significant and important portion of the report:

Hitherto the powers of offence, represented by artillery, and of defence, by armor, have advanced almost *pari passu*, sometime one and sometimes the other slightly in advance; but we appear now to be closely approaching a period when the gun will assert a final and definite superiority.

When the *Devastation* was designed there was reason to believe that armor such as her's (12 inch plates, besides backing) was impenetrable to the most powerful gun used by any nation. Since that time the adoption of improved gunpowder for heavy guns has so far increased the penetration of the 25 ton guns that at close ranges, the *Devastation* can no longer be said to be impenetrable to the guns actually carried in the turrets of the *Monarch*. Nor is this all. The *Devastation* herself is to carry guns of far greater power (35 tons) than those of the *Monarch*, and we see no reason to believe that the limit in weight and power in guns will even then have been reached. Sir William Armstrong in an important letter which he addressed to Lord Dufferin on the 3rd of March, and of which a copy is annexed says: "Even now the Elswick Company would not hesitate to accept orders for rifled guns of 14 in. calibre, throwing shot half a ton weight with a charge of two hundred weight of powder, and to pledge their reputation on the success of the undertaking." He adds, that "there are good reasons for inferring that no thickness of iron less than 20 in., supported by a backing corresponding to that used in the *Hercules*, would have any chance of offering the required resistance," to such a gun. Another very eminent authority, Sir Joseph Whitworth, in the accompanying paper with which he has favored us, says that he is prepared to undertake to make a gun of 11 in. bore which shall penetrate armor 16 in. thick at 1,000 yards and that, for protection against 13 in. bore gun, the armor would require to be not less than 24 in. thick. We see no reason to doubt that it is within the resources of science to construct guns of the power described, while it is certain that no first class sea-going ship of war of manageable size can be made to carry complete armor protection of anything like 24 in. in thickness, nor do we feel at all confident that even this thickness, if attained would permanently continue to be impenetrable. It remains then to consider whether, when these probabilities become accomplished facts, ship armor will retain any value, or whether it ought not rather to be abandoned as a mere costly encumbrance.

¶ Sir William Armstrong, as will be seen on reference to his letter, contemplates and recommends the reduction of armor-plating to ammunition, or even its total abandonment. His opinion, and the grounds on which it is based, are entitled to great respect, and have received our best and most careful consideration. But we have found ourselves unable to arrive at the same conclusion. After making every allowance for the disadvantages that attend the use of an enormous dead weight of very costly armor when after all it is not absolutely impene-

trable to certain special guns, we cannot lose sight of the indisputable fact that in an action between an armor clad and an unarmored ship (assuming that they carry guns of equal power) the former had and must have, an immense advantage in being able to penetrate the sides of her adversary at a distance at which she is herself impenetrable; and further, in being able to use with effect those most destructive projectiles "common" shells, which would fall harmless from her armored sides. Even assuming that absolute impenetrability to shot proves to be unattainable, it is still our opinion that the time has not come to throw off armor altogether, but that it is necessary that the first ranks of our ships of war should continue to carry armor of as great resisting power as possible. Before quitting this part of our subject, we desire to remark that although, as before pointed out, there are serious difficulties in the way of increasing to any material extent the thickness of armor applied in the usual manner to sea-going ships, viz., in the form of a complete belt around the ship, from stem to stern, at the water line, besides local protection for guns, men, etc. it is not by any means certain that some method may not be devised of securing the requisite reserve or buoyancy by other means than armor plating. Were this accomplished, the area of the armor might be diminished, and its thickness increased in a corresponding degree. The ship would then comprise a very strongly plated central citadel, surrounded and supported by an unarmored raft constructed on a cellular system, or containing some buoyant substance, such as cork, which without offering any material resistance, to the passage of projectiles, would not be deprived of its buoyancy by penetration.

In the absence of any practical experience of the effect of large shells or of torpedoes upon such a structure as that which we have in view, it is impossible to say with confidence that the object aimed at would be thus attained, and if it were, consequences of so much importance and value would follow that we think it right to indicate this line of inquiry as worthy of experimental investigation.

Another mode in which it is possible that additional carrying power (and consequently the means of increasing the thickness of armor) may be obtained, is by an alteration in the form of the hull at and below the water line. An important investigation, which has for some time been pursued by one of our colleagues, Mr. Froude, has, although not yet complete, led to the belief that the lines usually adopted at high speed under steam may perhaps prove to be actually less adapted to that purpose than a form which will admit of much greater weight being carried by a ship of equal length. In order to test this on a larger scale than has hitherto been within Mr. Froude's reach, their lordships had approved of experiments being undertaken to ascertain the actual resistance offered by the water to the passage of vessels of different forms and at various rates of speed. As these experiments will occupy some time, it is not in our power to do more than refer to them as indicating one of the directions in which important advantages may be sought with a fair prospect of success.

The wool manufactures of England embrace 1,550 factories, 10,462 carding, and 353 combing machines; they operate nearly two million spindles, and 33,792 power looms, and give employment to 100,640 persons, 53,811 males and 46,823 females.

WAR FEELING IN ENGLAND.

It would be a great misfortune if the idea should gain ground on the other side of the Atlantic that it was for the interest of the United States to insist on the interpretation which they have put on the Treaty of Washington, if by their doing so we should conceive ourselves compelled to repudiate it. It has been suggested on this side that the Americans care little or nothing about the settlement of the Alabama claims, whereas they attach great importance to the existence of an open sore between the two countries. That there may be some politicians in the United States who view the international relation between the two countries from this standpoint is possible, but we are confident that they are in a minority. Of what use, let us ask, could it be to the Americans to pick a quarrel with Great Britain, and what advantage would they be likely to reap from doing so. We are constantly told that Canada is defenceless, and that it only rests with the Union to determine the precise moment at which the Dominion should be swallowed up. It is even rumoured that should we withdraw from the Washington treaty the American Government would treat the clause relating to the Canadian fisheries as binding, and proceed to exercise rights which we have hitherto denied to them. But the advisers of President Grant are better informed than the general multitude, and know that Canada is not so defenceless as she seems, and that her annexation could only be attained, if ever, at the cost of a long and bloody war. The Dominion could at a shorter notice bring a greater number of troops into the field than the great republic itself, and it must not be forgotten that at the frontier of Canada is of great extent and defenceless, that of the United States is in the same position. At the first signal of war the English fleet would cross the Atlantic and blockade the American ports; and no one knows better than the Secretary of the Navy at Washington that the Union possesses no vessels which could compel us to raise the blockade or return the compliment by sealing up our ports.

Supposing, however, Great Britain was worsted in the conflict, and Canada incorporated in the Union, has that class of politicians to which we have referred reflected on the consequences? The balance of power in the union would be destroyed, and Canada and the Southern Confederacy between them would effect that disintegration of the republic, despite the Northern States, which was so nearly effected in 1861.—*London Morning Post*.

John B Gough tells the following story, though the joke be at his own expense. Once while on a lecturing tour, through England, he was introduced to a large audience in these words. Ladies and Gentlemen—I've the honor to introduce the distinguished lecturer, John B. Gough, who will address us on the subject of temperance. You know that temperance is thought to be rather a dry subject, but to night, as we listen to our friend the orator from beyond the ocean, we may hope to have the miracle of Sampson repeated, and be refreshed with water from the jawbone of a hash."

The friends of the "Home Rule" in Ireland will be pleased to hear that Mr. Gladstone has stated in Parliament that it is intended to have Irish private Bills dealt with in Dublin. This we believe, is all that the ablest and most honest advocates of the movement require.