

system is not in any way discredited by the fate which overtook this one example of it; indeed, they contend that, had not the original design been departed from, she would have proved a better sea boat than her rival the *Monarch*, in addition to the many advantages which they allege she possessed as a fighting ship. Be this as it may, the *Monarch* has been proved to be a success. She carries her armament of four twenty-five-ton muzzle loading rifled guns in two turrets placed on pivots between her fore and main masts. These turrets are covered with armor plates of eight inches in thickness, excepting in the immediate vicinity of the ports, where they are increased to a thickness of ten inches. The guns are so mounted that they may, by hydraulic power be raised or lowered so as to vary the extreme angles of elevation and depression from 16 deg. of elevation to 7 deg. of depression.

The *Hercules* and *Sultan*, though differing in some particulars, may be classed together, their chief characteristic being the powerful central battery which they carry. Their principal advantages are the extreme steadiness of gun platform, and, owing to the ports being deeply embrasured, the very wide range of their fire as compared with ordinary broadside ships. Besides the central battery, which is shut off from the rest of the ship, fore and aft, by thickly armored bulkheads, they have armor protected bow and stern batteries. The length of these ships is 325 feet, their breadth of beam 59 feet, and their draught from 23 feet to 27 feet. The estimated displacement of the *Sultan* is 9,285 tons, and that of the *Hercules* 8,677. Their engines are 1,200 nominal horses' power, working up to more than seven times that pressure.

The *Audacious*, the last of the broadside ships forming part of the Channel squadron, is of a type known as the improved *Defence*. The *Defence* and her sister ship the *Resistance* were built in 1861; the *Audacious* was launched in 1870. These two classes of ships being of precisely the same dimensions—viz., 280 feet in length and 54 in breadth—afford a fair standard of comparison by which to estimate the progress which had been achieved in the interval of nine years. The *Defence* has 4½ inch armor, the *Audacious* 6 inch. The *Defence* has one-fourth of her length at the bow and another fourth at her stern left wholly without armor, her steering apparatus being entirely unprotected, the *Audacious* has armor throughout, 9 feet wide at the waterline, rising to about 4 feet above the water, and thoroughly protecting her steering gear. The *Defence's* ports are 7½ feet above the water, in the *Audacious* they are 8 feet, and some 16½ feet. The *Defence's* guns train through 60 degrees on the broadside; the guns of the *Audacious* train all round. The *Defence* has a single bottom, the *Audacious* a double bottom throughout. The *Defence* draws 25½ feet of water, the *Audacious* about three feet less. The *Defence* carries 607 tons of 4½ inch armor on 18 inches of wood backing, and a ½ inch iron skin, the *Audacious* has 924 tons of 8 inch and 6 inch armor on 10 inches of wood, and a ½ inch iron skin; the weight of the *Defence's* broadside thrown from protected guns is 640 pounds, that of the *Audacious* 1,250 pounds. The *Defence* under steam makes 11½ knots, the *Audacious* 13½. The area of plain sail in the *Defence* is 22,400 square feet, that of the *Audacious* 25,000 square feet.

There now remain only two of the armored vessels of the Channel squadron for us to consider, but these, or at any rate one of them is the most powerful of

the whole force. The *Glatton*, launched in 1871, being designed chiefly for action against first-class ports and fortresses, was built of enormous strength and of the lowest freeboard compatible with stability. Her armament, consisting of two 25 ton guns, is carried in a single turret, and she is completely protected by armor, varying in thickness from 10 and 12 inches on the sides and the breastwork which defends the base of the turret, the funnel, the hatchways, etc., to 12 inches and 14 inches, the thickness of the armor upon the turrets. The *Glatton* is the smallest ship of the squadron which is to be inspected on Monday, being only 245 feet in length and 54 feet in beam, measuring with all her weights on board only 2,709 tons. Her draught of water is 19 feet, giving a free board of 3 feet, but an arrangement is made for sinking her another foot in the water in time of action by letting water ballast into her. The *Glatton* alone, of all the ships in the squadron, possesses the merit of having been actually tested as to her resisting power, having been subjected to the experiment of being fired at. The result of this trial, it will be remembered, was satisfactory, the ordeal being severe, and the damage done to her turrets comparatively insignificant. The last of the iron clad launched from any of our navy yards is the *Decastation*. This monster carries four 35 ton guns, disposed in two revolving turrets, shielded by 14-inch armor plates. Her dimensions differ very little from those of the *Glatton*, but her tonnage amounts to nearly double as much. Her draught of water is about 26 feet. The object carried out in the design of the *Decastation* was 'to produce a ship combining power of offence and defence greater than those possessed by other ships she was likely to meet.' A regards defensive power it was held to be necessary to provide a target of sufficient resisting power to stand fire from any French guns. This might be accomplished by a 10 inch plating of armor, but in order to guard against being overtaken by rapid improvements in the French guns it was thought desirable to cover all the vivid parts of the ship with 12 inch armor. The turret system presented itself naturally as the means of mounting and working her armament, designed as it was to consist of the heaviest known artillery. To secure a perfectly all round fire everything in the shape of masts, yards, and rigging was dispensed with, and the new monitor was to rely entirely upon her engines. Provision, therefore, must be made for an ample storage of coal. Accordingly, room was made for 1,700 tons, or about eighteen days, supply when steaming at ten knots. The freeboard of the *Decastation* is about 4 feet 6 inches, but is carried to a height of 11 feet 6 inches amidships by an armor-plated breastwork, designed for the protection of the base of the turrets, the funnel, air shafts, etc. This breastwork, adds considerably to the buoyancy and stability of the ship. Above the turrets, both in the *Glatton* and *Decastation*, there is a flying or hurricane deck for the stowage of boats for conning, and for working the ship. The only fault which has been found with this last design is that her bows are too low in the water, and that she incurs a serious risk of being smothered by the waves when being driven at speed through head seas. Ever since her completion she has been taking short trips in the hope of meeting with such weather as might afford her an opportunity of practically ascertaining whether this defect really exists or not, and although she has not been favoured with

bad weather, her behaviour in such seas as she could experiment upon has been so good as to give every hope that she may prove a safe and seaworthy boat.

Besides the ships of the Channel squadron which we have enumerated, there are a few, not in commission, anchored at Spithead, representing various types of iron-clad vessels. Among these we may mention the *Caladonut*, one of the same class as the *Prince Consort*, to which we referred above; the *Hesperus*, a vessel built expressly for ramming purposes; the *Gorgon* the *Cyclops*, and *Heats*, heavily armed and armored low freeboard turret ships; and the *Waterwitch*, armor plated, hydraulic gun boat. The absence of one vessel of a distinctive character is a source of regret—namely, the *Inconstant*—not only on account of the peculiarities of her construction, but because her enormous speed and the extreme beauty of her lines fairly entitle her to be represented in a squadron which is intended to comprise samples of almost every type of ship in the navy.

Whatever may be the effect of the naval demonstration upon our guests, one advantage must at any rate accrue from it to ourselves—it will, or ought, if anything can, to silence the grumblers or alarmists who refuse to believe in the existence of a British navy, and provides the best possible illustration of the history of naval construction during the last few years.

#### HOW TO MAKE GOOD MARKSMEN.

We are permitted to publish the following interesting letter addressed by General John Gibbon to the President of the National Rifle Association:

His General Recalling Service, U.S.A., }  
New York, July 1, 1873. }

MY DEAR COLONEL:

The start at Creedmoore is a step in the right direction, and a popular acknowledgment that before a man can be a soldier he must know how to shoot a gun, and that, not in a Bobacero fashion, but with a full idea as to what his piece is capable of performing. No matter how well drilled and disciplined a body of men is the men themselves are not soldiers until they all know the full capacity of the arms they carry. Discipline is of importance under all circumstances. There are thousands of cases in actual battle where the best drilled regiments cannot perform a manoeuvre. There are none where efficient firing is not of vital importance, and a soldier who knows what his piece is capable of, imbibes from that fact alone a confidence in himself and a courage which add immensely to the importance of his services in battle.

Now that armies are armed with nothing but rifles, accuracy of fire becomes of much greater importance than when smooth bores and buck and ball were used, for them chance shots were almost as efficient as accurate firing.

With many men a lifetime of constant practice is not sufficient to make a good marksman. Not one man in a hundred becomes a good shot, and not one in a thousand becomes a "crack shot"—able to hit his mark at all ranges. Many a man who can knock over a bird in full flight with a shot gun, cannot hit with certainty the size of a man at a hundred yards with a rifle until after long and careful practice; and even then put a man in front of him with a rifle in his hand, or even a harmless deer, and his sight will fail him.