

## A NEW CANNON.

The "Woolwich Infant" is no longer a prodigy. The public has become familiar with its appearance and performances; and also with some ngly rumours about the effect on it of charges which were probably unduly and unfairly large. We have now nine or ten of those monsters. But a new gun is about to be produced—a gun of thirty six tons, which will be some three feet longer than the "Infant," and be otherwise greatly improved in shape. Any one who has seen a member of the Infant family must admit that, whatever may be their strength a more ugly, squat thick set race never existed; while on the other hand the proportions of the newly-designed cannon will be so slender and tapering as to be almost graceful in appearance. It will be calculated to stand a greater charge of powder, and be doubtless more true in aim at long distances than the 35 ton gun. The new gun is to be employed on land for harbour defence most probably in some of the new forts at Plymouth, while the use of the Woolwich Infant will be confined to the navy. Of these latter, it will be remembered, the iron-clad *Devastation* and *Thundered* are each to carry four, in armoured turrets, the guns being mounted in pairs side by side, two in each turret, so that their whole force may be brought to bear at one time, if necessary. In this way nearly a ton and a-half of metal—for the shot weigh 700lbs, each—will be discharged at once; a greater weight than was ever thrown in a broadside by the old first-class men-of-war carrying their 120 or 130 guns. And how much more effective the projectiles from these heavy rifled guns will be, it is easy to imagine. The reasons which have led to the construction of a still heavier gun are based no doubt, on the desire to employ more powder, and thus to expel the shot with greater velocity, and perhaps more certainty. As it is, the penetrative power of the present gun is equal to piercing an armour plate 14½ inches in thickness at 50 yards, while at the distance of 1000 yards or more the shot would go clean through the side of the *Hercules*, one of the stoniest ironclads afloat, which has solid iron walls 12 inches thick. These results are obtainable with 80 or 90 pounds of powder, and if this charge is increased in the "Woolwich Infant" to any great degree—say to 100 or 110 pounds—no corresponding energy is put forth, for much of the powder is then thrown out to the muzzle unburnt. By lengthening the gun therefore, and without enlarging the bore, it will of course be possible to burn more powder before the shot issues from the gun, and it is hoped a higher velocity and greater battering force will then be obtained; the full power of the weapon being, in fact, put into requisition. Instead of 90 pounds of powder, 110 may be employed, while the strain upon the inside, or core, of the gun will not be greater than before. Again, it is feared by many that the bore of the present 35 ton gun—twelve inches—is greater than is compatible with its perfect safety. It will be remembered that, in the first instance, its diameter was but 11.6 inches, but that afterwards the tube was bored out (and consequently weakened), in order to take a 12 inch projectile. No divided opinion, however, exists as to the capability of the new 36 ton gun to throw with safety such a projectile; and, therefore, while the weapon will not perform a heavier task than its predecessor, that task will be performed with more efficiency and safety. As the gun will not be employed afloat, there need be no restrictions as to length, and consequently all conditions requisite to its proper manufacture

can be complied with. It is to be built like the other upon the Frasersystem—that is to say, with a steel tube and wrought-iron jacket. The solid pillar of steel, which is bored out to form the tube, is a very costly affair and by itself is valued at £500. About 50 tons of wrought-iron will be employed for the outside jackets, or cylinders, to clasp round the steel tube, as much as 30 tons of metal being required for one part alone. These cylinders are made as the reader may know, by heating long bars of iron somewhat resembling railway iron, and coiling them when at a white heat round a huge reel, so as to form a spiral of glowing metal. This spiral is afterwards put into a reverberatory furnace, and then hammered or welded under a steam hammer until it forms a hollow cylinder, and these cylinders are then placed round the steel tube, thus forming the gun. The bar of iron for making the principal cylinder in the 30 ton gun will be upwards of 1200 feet in length, and the furnace in which it is placed, when twisted into a spiral of coil, is a roomy apartment in which twelve or fourteen people might dine comfortably. As a matter of course, forgings of this gigantic nature necessitate machinery of a most stupendous character, and arrangements are now being actively carried on at the Royal Arsenal at Woolwich for the erection of a 30 ton steam hammer, which, with a full jet of steam, will be capable of striking a-blow of several hundred tons.—*Daily News*.

## ARMOUR OR NO ARMOUR.

Captain Edmund Wilson, R.N., has addressed a letter, under this title, to the First Lord of the Admiralty, in which he urges the importance of submitting his system of *inside armour* to a fair trial. He says, "Many officers are of opinion that armour of sufficient thickness to resist shot from a 12-ton gun cannot be carried with safety on the outside of a ship; and it therefore only becomes a dangerous incumbrance, from the innumerable splinters of iron, like so much langridge decimating the crew who stand behind it, when pierced by a shot. If, therefore, it is considered desirable to have no armour still our navy cannot consist of wooden ships, owing to that dangerous missile, the shell which experience warns us has set many on fire; neither can we have the commonly-buried iron ship, which, although free from the above disadvantage, would still labour under even a greater viz, that no gun's crew could do their duty, amidst the innumerable splinters caused by a shot striking iron plates. Those, therefore, who are advocates for no armour, must see the necessity for adopting the composite principle of ship-building, it is in fact, the only safe method as regards the damage a shot or shell might occasion on entering the side of a ship."

In the case of a turret-ship, the abandonment of armour outside would render it necessary to find some other means of defence for the toward part of the turret. This could be done by inside armour carried down to the orlop deck. Captain Wilson continues—

"There are many officers in favour of central batteries in preference to the turret. Now these central batteries can be heavily armoured, and the armour carried down to the orlop deck, as specified in my model submitted to the Admiralty in 1863—also in a model likewise submitted by me in 1858 having two circular batteries.

"There is another peculiar feature in inside armour, which is that as the plate required no planing or landing, they might be kept in store in all parts of the world, and

put in place without going into dock; so that should war suddenly break out, a fleet might be clothed in and incredibly short space of time; and when blockading an enemy's port, or proceeding to a distant station, some of the compartments might be filled with stores and coal."

Captain Wilson further expresses his opinion that what we require is:—

"Firstly, a very fast class of ships, heavily armed, on the composite principle, wholly unarmoured.

"Secondly, a fleet of central battery ships, on the composite system, combined with internal armour, a maximum rate of speed of eleven knots.

"Thirdly a class of turret ships to cooperate with the fleet.

"The unarmoured class would be eligible for the protection of our commerce, and to take their place with the fleet, as our frigates did in days of yore. The ship composing the fleet should be of similar dimensions and steam power, not exceeding three hundred feet in length, by sixty-four in breadth: this proportion would ensure good sailing qualities, and admit of the armour being placed six feet in-board, as well as the central battery with its sixteen twelve-ton guns. The turret class should be composed of sea going ships, and those for coast defence. A sea-going turret ship must have grate speed, so as to be able to harass the enemy's rear should they decline battle; and in a general action, the captain of a turret ship possessed of sound judgment and skill, would have it in his power to inflict severe punishment on the enemy, which might probably result in their surrender."

In conclusion, he observes that "we have at present no fleet of iron-clads that could well manœuvre together; some are too long others have their guns too near the water; most of them steer badly; none are shot-proof, and all had sea boats!" For these defects, however he does not think the authorities are blameworthy, as they could not know when the fleet was suddenly transformed, as we know now, what was necessary for efficiency.—*Broad Arrow*.

Hierocles, who lived in the sixth century collected twenty-one jests under the general title of the Podants.

Among these ancient jests is the account of the man who for fear of drowning determined not to enter the water until he was master of the art of swimming; of the man who complained that his horse died just as he had taught it to live without food; of the philosopher who carried a stone about with him as a specimen of his house; of one who stood before a glass with his eyes shut, to see how he looked when he was asleep; of the man who bought a crow, to see whether it would live two hundred years; and of one who went into a boat on horseback, because he was in a hurry. Here we find the ever-new story of a man who, meeting a friend, asked whether it was he or his brother, who was buried; and the blundering excuse of the person who having attended to the request of a friend, said when he met him, "I'm sorry I never received the letter which you wrote to me about the books." The Rev. Mr. Hartley, of Philadelphia, must, we should imagine, have come fresh from the perusal of Hierocles when he forwarded to M. Thiers last year one of the original bricks of Independence Hall in that city, "with the earnest prayer that the legislators of beautiful France may derive from it such an inspiration as shall lead them to erect a republic whose dignity, justice, and purity shall be the admiration of our age, and which shall prove a model for other nations in securing the rights and liberties of their people.