the Duilio, and to the Krupp 9½ inch guns, one of which burst at the Dardanelles and the other two respectively at Rustchuk and on board the German Gunnery ship Renown. The gun at Rustchuk was a disastrous explosion, a number of officers and men having been killed or wounded, and the gun on board the Renown made havoc with the crew of that ship. We warned the Government of the day that the true system of making large guns was to place the tubes or barrels loose inside their casings, on the plan so successfully originated and carried out by Sir W. Palliser, and that to succeed in this operation the barrels should be made of soft and ductile coiled wrought iron, which all know to be so excellent for sporting guns. The gun casings used by Sir W. Palliser have hitherto been of cast iron, as the casings can be easily made of that material, but it is known that he does not oppose steel casings, but would gladly adopt them if they could be successfully cast, though still adhering to his system of the loose, tough coiled barrel. Our warnings would appear to have had some effect, as judging from an article in an evening contemporary, a great gun manufacturing firm is abandoning its lines, and a complete change of front is taking place, and it has been announced that a new plan has been hit upon other than that of soft coils shrunk over hard steel tubes.

We welcome the change, whatever it may be, it is a distinct proof that our objections and criticisms have been correct, and if further sign were wanted we point to Woolwich, whence it is announced that a radical change is likely to take place in artillery manufacture. Through all these changes and seeming perplexity, it is refreshing to observe the steady progress of Sir Wm. Palliser. He does not abandon any portion of his system, but holds on his way to the sure goal of ultimate adoption. The firing of his guns doubly loaded has produced a deep and permanent impression in the minds of all thoughtful and unprejudiced artillerists, not only throughout the service generally, but also in official quarters. Experiments now in progress at Shoeburyness would seem to indicate that the Palliser guns in Her Majesty's service are to be more heavily loaded in future. The charge of 4½-ton Palliser gun, which previously was 10lbs. of R. L. G. powder and an 80lb. projectile, has lately been increased to 25lbs. of pebble powder and a projectile of 100lb. The importance of this progress in power may be estimated when the enormous number of these guns on service in England, India, and the colonies is considered. It so happens that Sir John Adye, the present surveyor-general of the ordnance, was one of those who originally recommended the adoption in large numbers of these guns into the service about 12 years ago, and the consideration that no one accident has occurred during all this time out of the thousands of Palliser guns which are in our service, and which are constantly being fired all over the world, taken in conjunction with the great and successful development of the system in the United States, will no doubt exercise a considerable influence in his mind as to the direction which experiments with rifled guns of the largest calibre ought to take. An 11-inch Palliser gun has just been completed in America, and four 12-inch 40-ton breech-loading guns are to be manufactured at once. These will have soft coiled wrought-iron barrels loose in their castings, so that the latter will be quite free from the initial tension caused by being shrunk on. This is the key to Sir William's success, for by a scientific application of different metals in his guns, the strain on firing is felt through the whole structure, while it is limited to the tension solely due to to the pressure of the powder charge, and hence he is enabled to fire his guns doubly loaded. Alluding to their heavy breech-loading guns now on order, an American military contemporary observes, "once under weigh it will be perfectly feasible to make a large number to supply our forts, and experience shows that that in range and penetration we shall be fully equal—if not superior—to any arms that can be brought together against us. Both British and Italian officers admit (after spending millions) that they may be compelled to adopt the American system." The Thunderer disaster has been the cause of a new and most effective way of testing guns. A Woolwich ton gun tested in this manner has been blown into hundre fragments. Sir William Palliser asserts with confidence a 38-ton gun constructed on his principle would with double loading as well as the 7-inch did, and that the sub tion of a coiled barrel for the steel tube in the Woolwich would bring these guns into harmony with his principle would enable them to stand the test of double loading. maintains that unless a gun will stand this test it is unfit retained in the service. We unhesitatingly maintain tha truth of opinions based upon practical experience, ought, i interest of the service, to be at once tested in a gun o heaviest calibre.—*London Morning Post, Dec.* 28, 1880.

THE GREAT BREECH-LOADER.

Yesterday the 43-ton breech-loading gun was fir the proof-butts of the Royal Arsenal, Woolwich, i presence of General Sir Evelyn Wood, V.C., and Wood, Colonel Eardley Maitland, R.A., Superintende the Royal Gun Factories, and others. The most rem able peculiarity of the gun, as seen from a little dist is its extreme length, which gives it a shape much d ent from that of the ordinary guns of the service. A of similar weight, constructed on the principles w have hitherto prevailed, would measure probably more than 20 ft. in length, while this one is 7ft. 8i yond that measurement. The bore has a diameter in., and is 26ft. long, forming a capacity which, wit enlarged chamber, will enable it to employ profitabl combustion of large charges of mild powders. Scie research into the action of fired gunpowder has, in ating the bore, rendered muzzle-loading difficult, an cause, combined with the introduction of chamberin the necessities of the navy for guns which can be ha in limited space, has brought about breech-loadi heavy ordnance. The breech piece is a solid cylin screw, about 18 inches long and the same diameter bore, and is worked with great simplicity. At the to load, a gunner turned a handle, releasing the which was drawn out, received by a carrier and away to the right, where it was held by a simple The projectile was then pushed in until it was stopp a choke in front of the chamber, and this was follow the cartridge. The former weighed 714lb, and the which consisted of perforated prisms 1in. across, w 250lb., which is some 50lb. short of the contem maximum. A plate, bearing four crusher-gauges cording pressure, was then inserted, and the breech was brought back and screwed home in a few se It is obvious that a screw 18 in. long, and bearing number of threads, would require an equal num turns to fix it into its seat, but, by cutting away h quantity of the screw and the screw-nut in the gun, intervals are created, along which a fraction of r enables the block to escape, or fixes it firmly in its The great weight of the gun has necessitated gear this purpose, and a simple contrivance sets in m toothed segment which locks or unlocks the breec block being run in and out by a quick-threaded similar to the slide-rest of an ordinary lathe. Th ing of the breech, or obturation, as it is called, is by an expanding steel cap on the face of the breech which effectually prevents the escape of gas to th These and other particulars having been explained visitors, a tube was inserted in the axial vent, gun being fired, gracefully recoiled up its railed pl the shock of discharge being largely absorbed by draulic buffers. Captain Morley, R.A., the proof reported the velocity of the shot to be 1,718 feet cond, which, for a small charge, was fair.—*Londo Telegraph.*